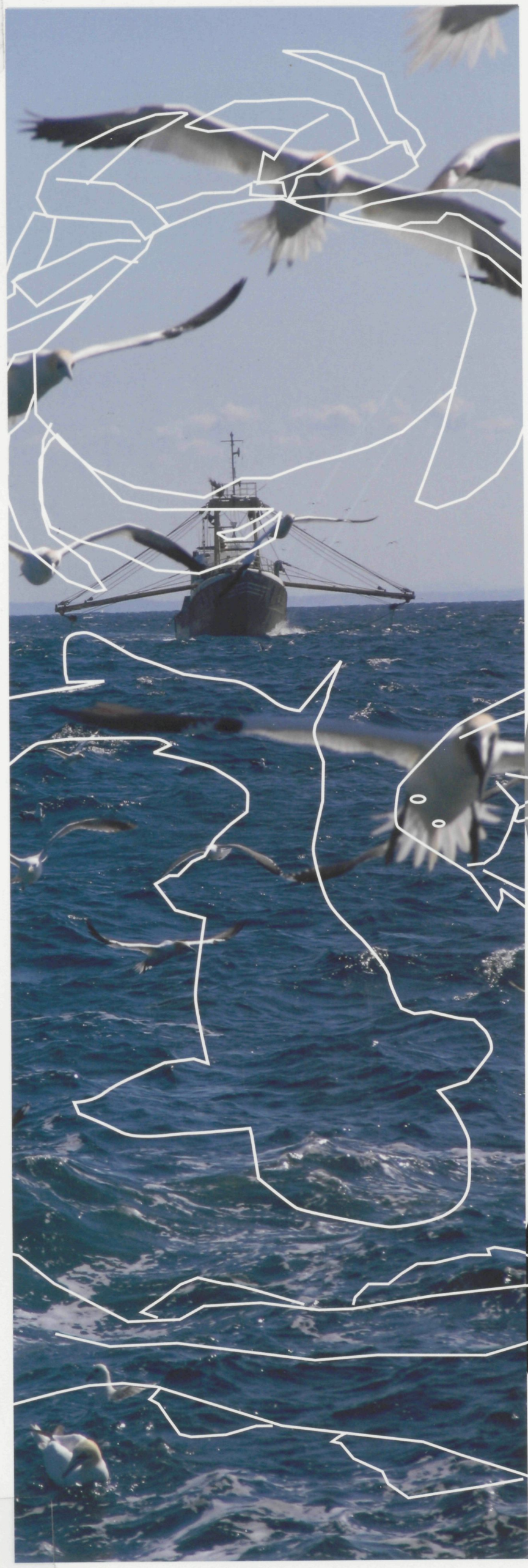


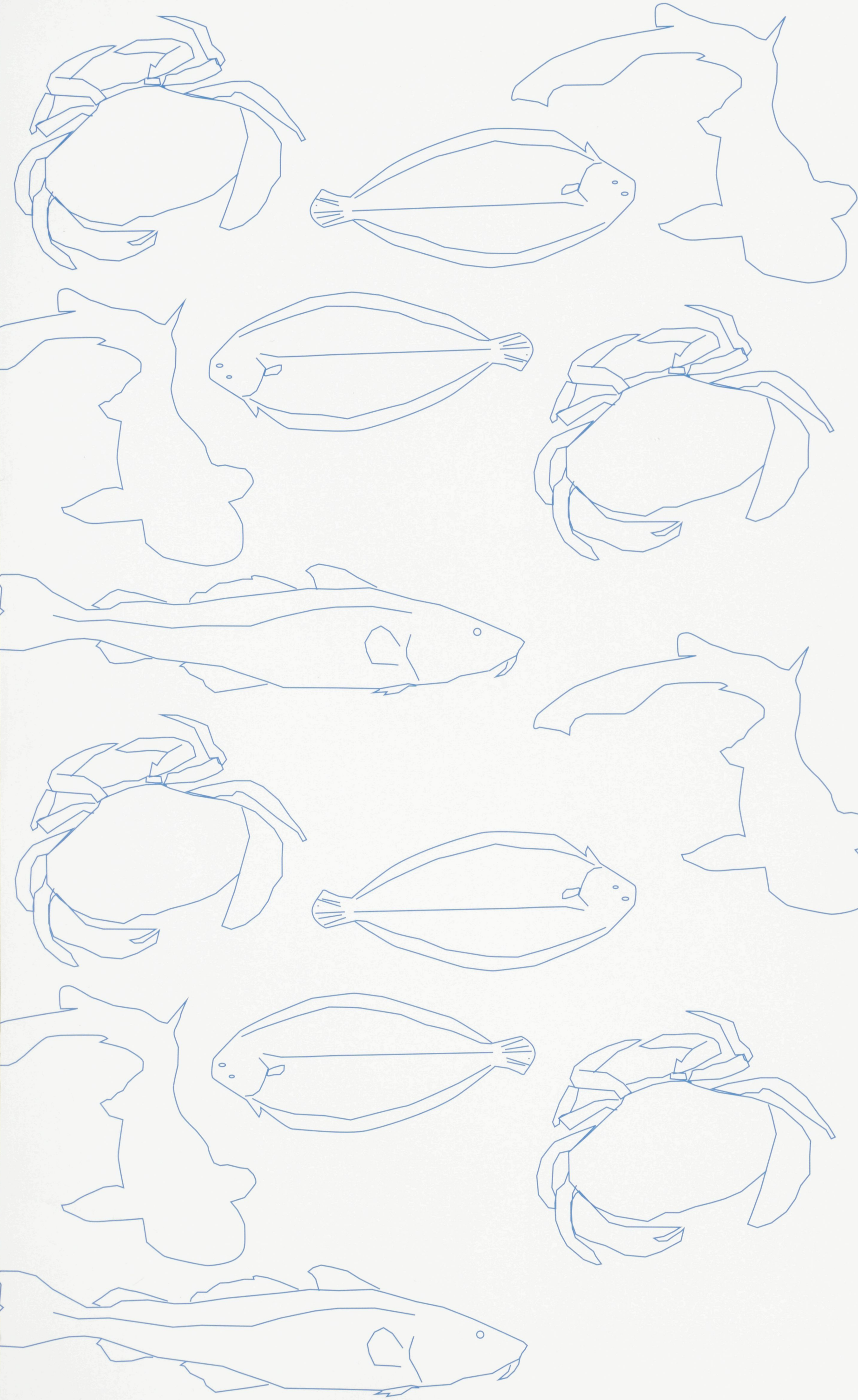
LECOFISH

An ecosystem approach in sustainable fisheries management through local ecological knowledge

Frank Maes
Jessica Coppens
An Vanhulle
Maritime institute
Ghent University







COLOFON

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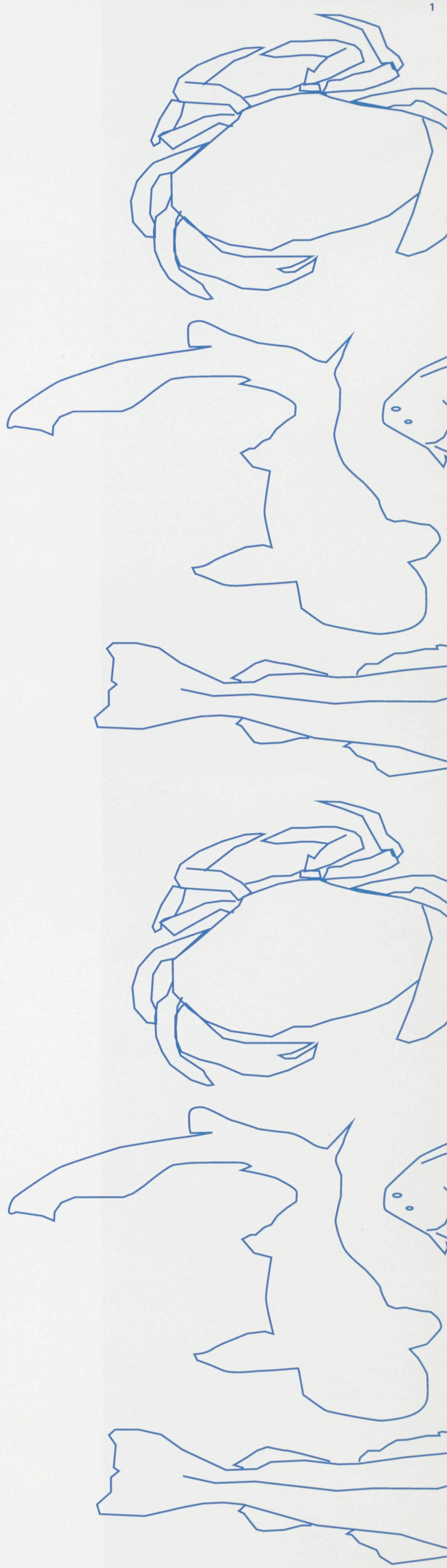
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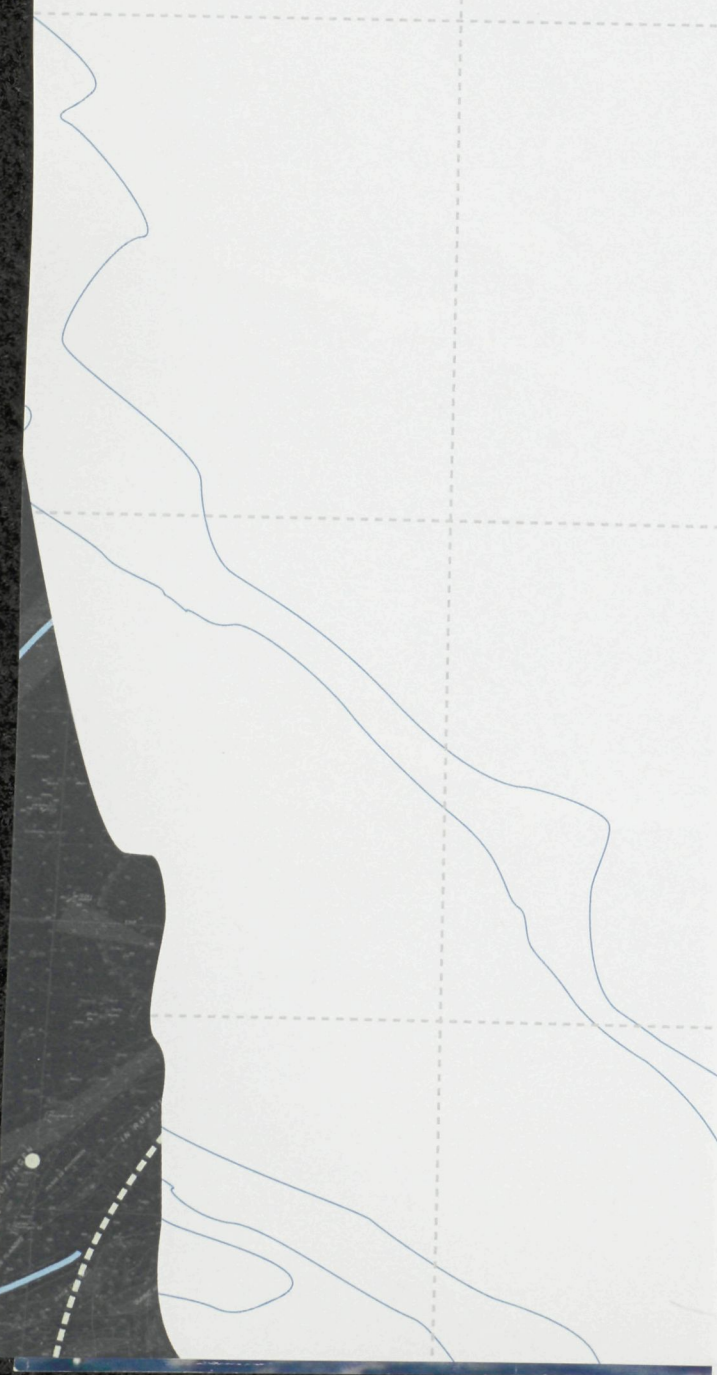
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MAPS SERIES I



COD

FISHING ZONES - COD

commercial & recreational fishermen 1950-2010

1/ cod fishing zones drawn by the fishermen

Recreational fishermen (11/12)
Commercial fishermen (14/20)

Wrecks
General areas (not specified)
Exact fishing tracks / zones

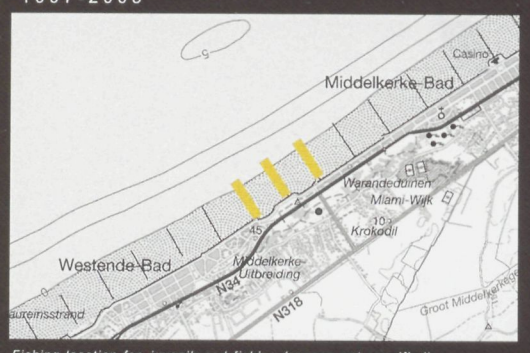
Breskens
Nieuwvliet
Cadzand
Knokke
Zeebrugge
Blankenberge
Wenduine
De Haan
Bredene
Oostende
Mariakerke
Middelkerke
Westende
Nieuwpoort
Koksijde
De Panne

Nieuwpoort
1965-2010 / 1983-1996



Exact fishing locations for cod specified by 2 recreational fishermen, only winter time (starting in november)

Westende-Middelkerke
1997-2005



Fishing location for juvenile cod fishing (season not specified)

Oostende
1970-2010



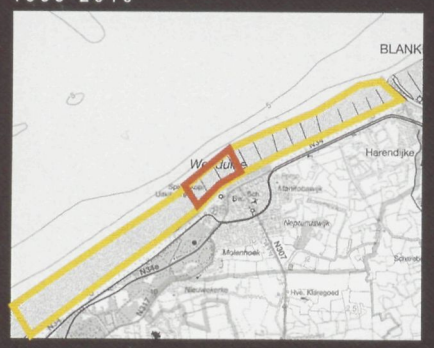
Fishing location for cod and juvenile cod fishing in winter time (november - march)

Bredene
2000-2010



Area specified as a competition zone; cod is caught in winter time

De Haan-Wenduine
1995-2010



Yellow area specified as a competition zone; cod is caught in winter time
Orange area specified as favourite fishing location ("Rotonde Wenduine"); cod and juvenile cod are caught in winter time

Blankenberge
1968



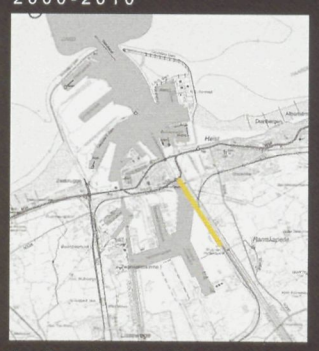
Fishing location for cod fishing in winter 1968

Zeebrugge
1956-1965



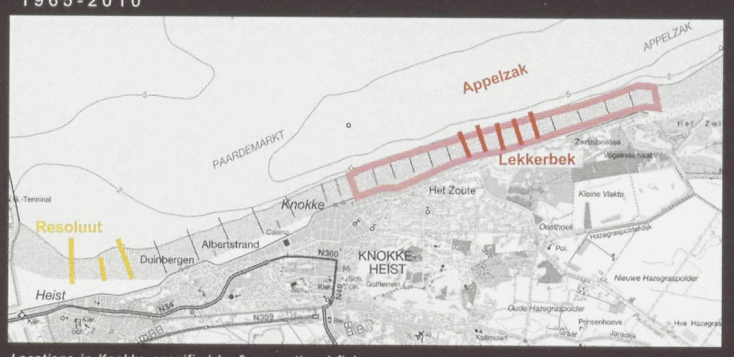
Location of juvenile cod in winter time
(n.b. only occasional catches of juvenile cod / cod due to basic fishing gear)

Zeebrugge
2000-2010



Location of juvenile cod in winter time

Knokke-Heist
1965-2010



Locations in Knokke specified by 2 recreational fishermen
Fishing location for cod and juvenile cod fishing in winter time (yellow: 1965-1988, orange: 1965-2010, pink: 2000-2010)
cod fishing only from mid october till december and again in march-april

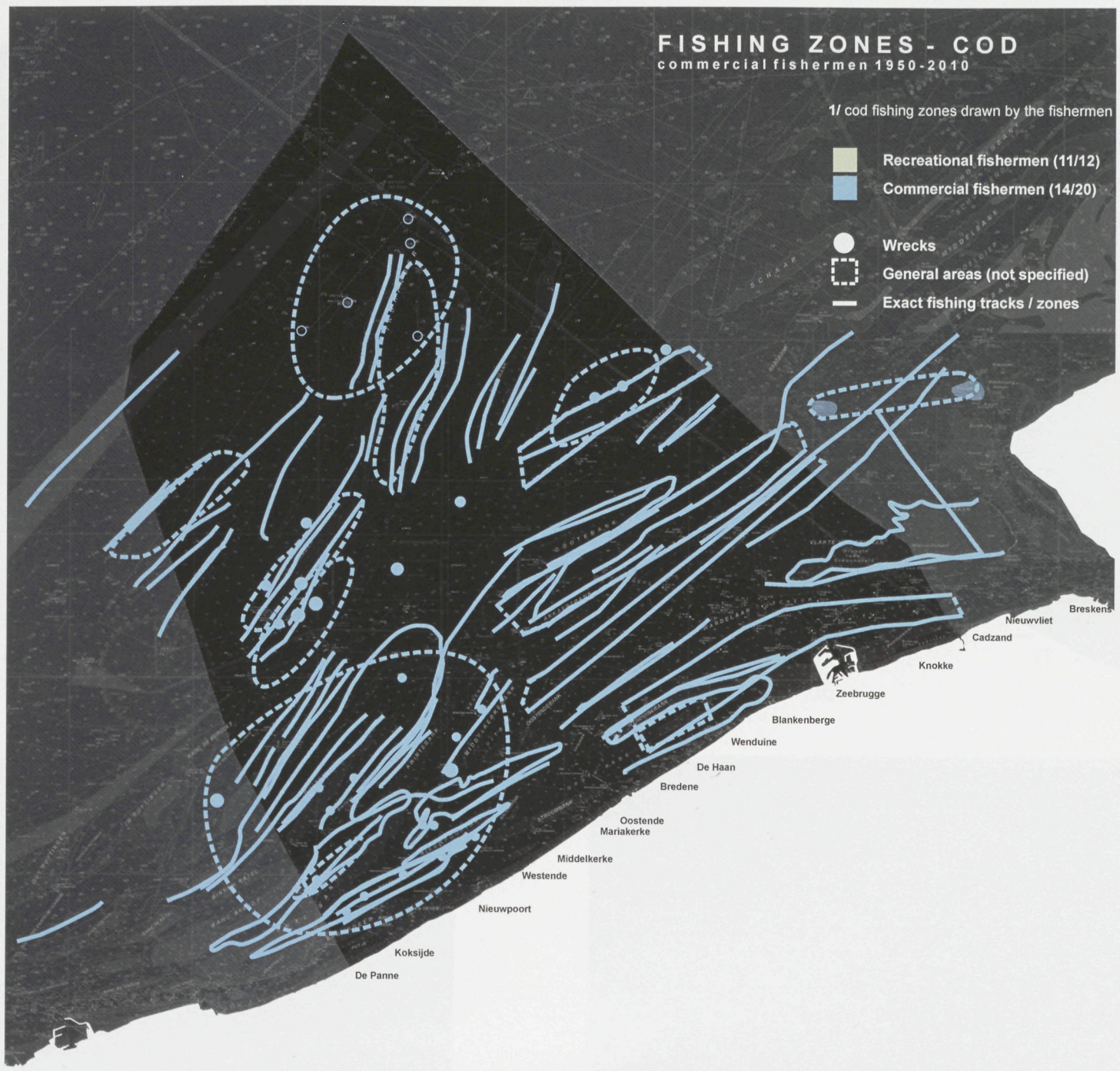
FISHING ZONES - COD

recreational fishermen 1956-2010

1/ cod fishing zones drawn by the fishermen - detailled maps

COD - fishing zones

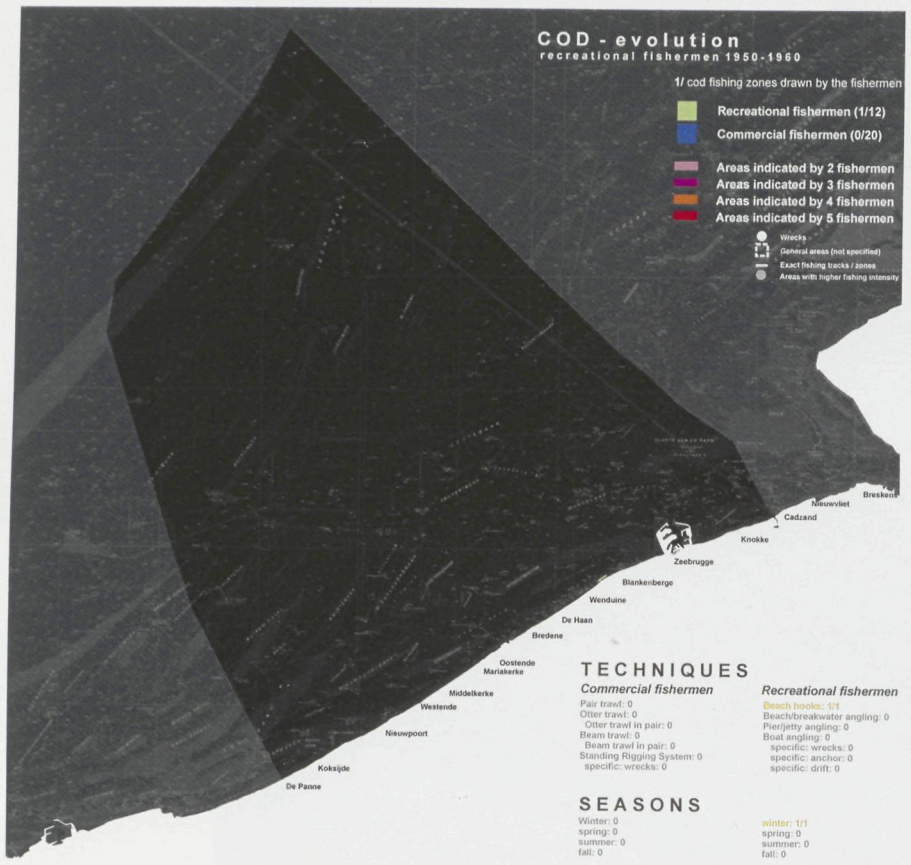
commercial & recreational fishermen 1950 - 2010

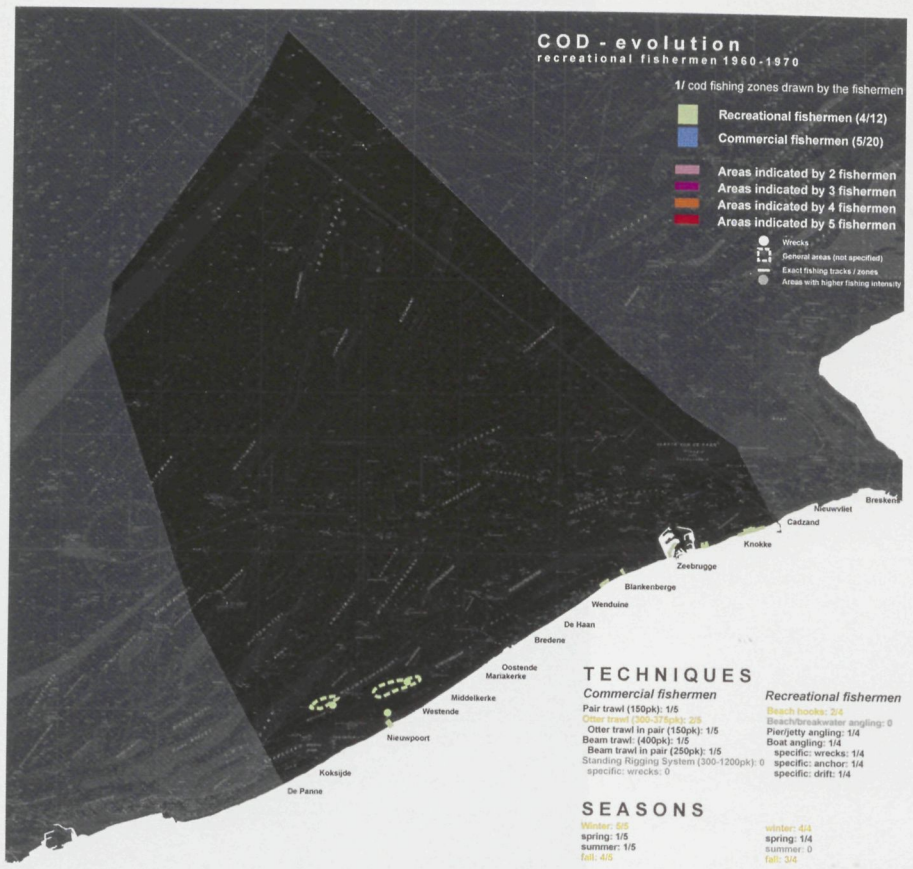


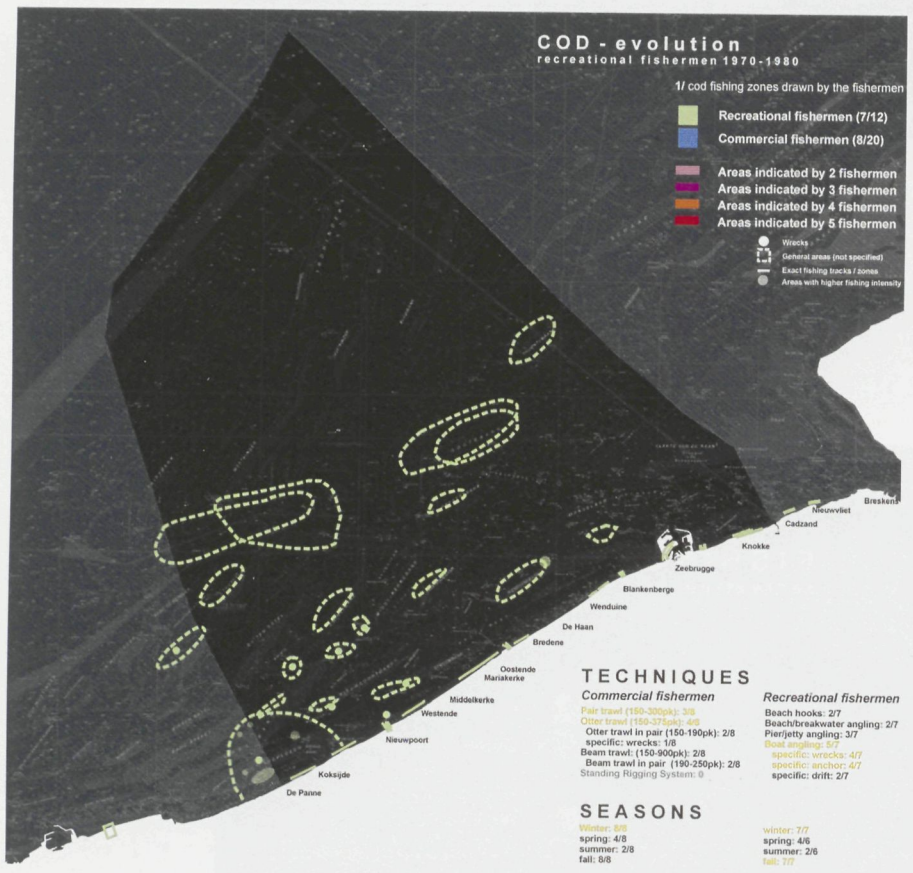


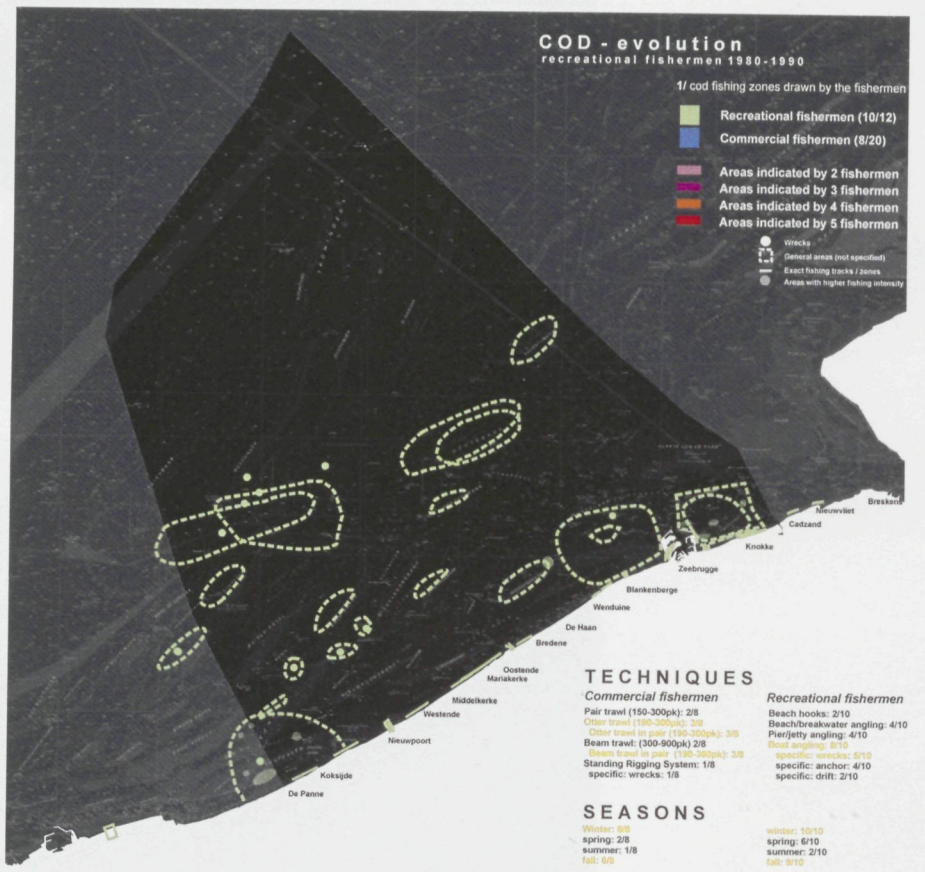
COD - fishing zones

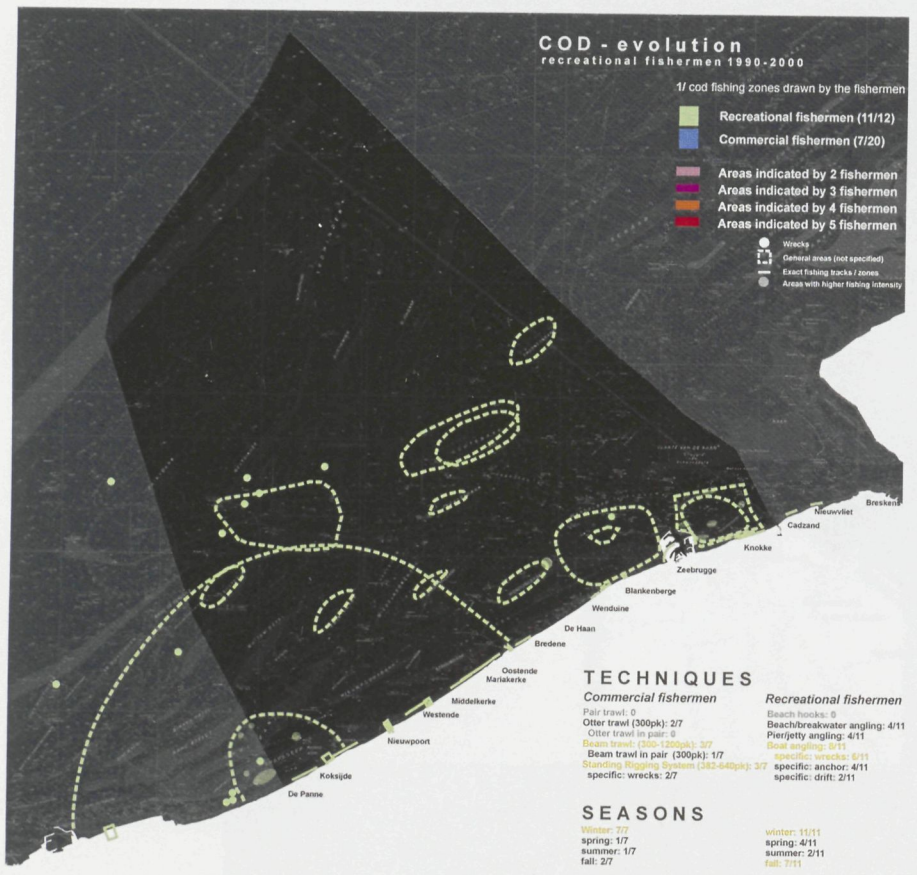
commercial & recreational fishermen 1950 - 2010

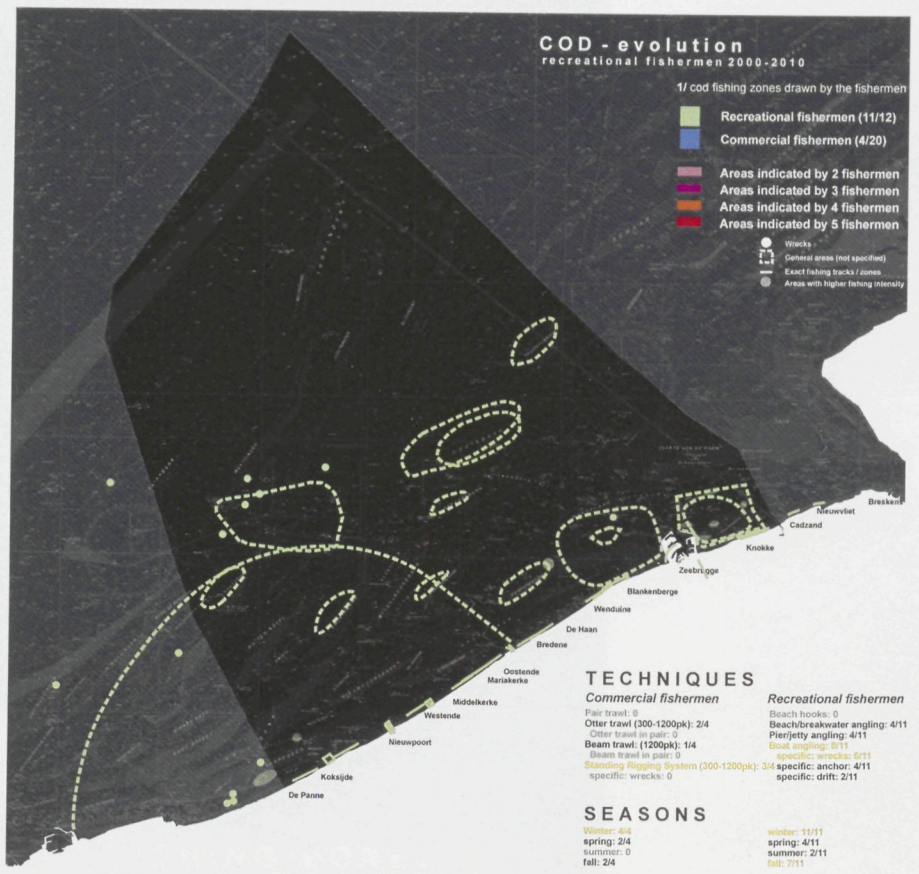




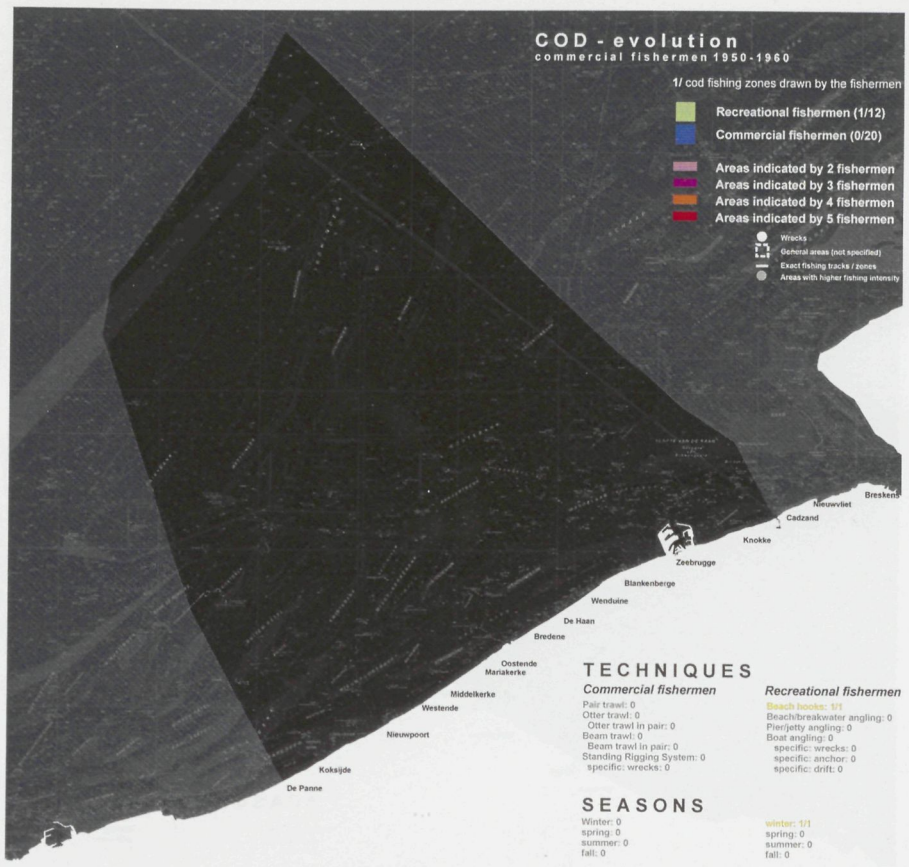


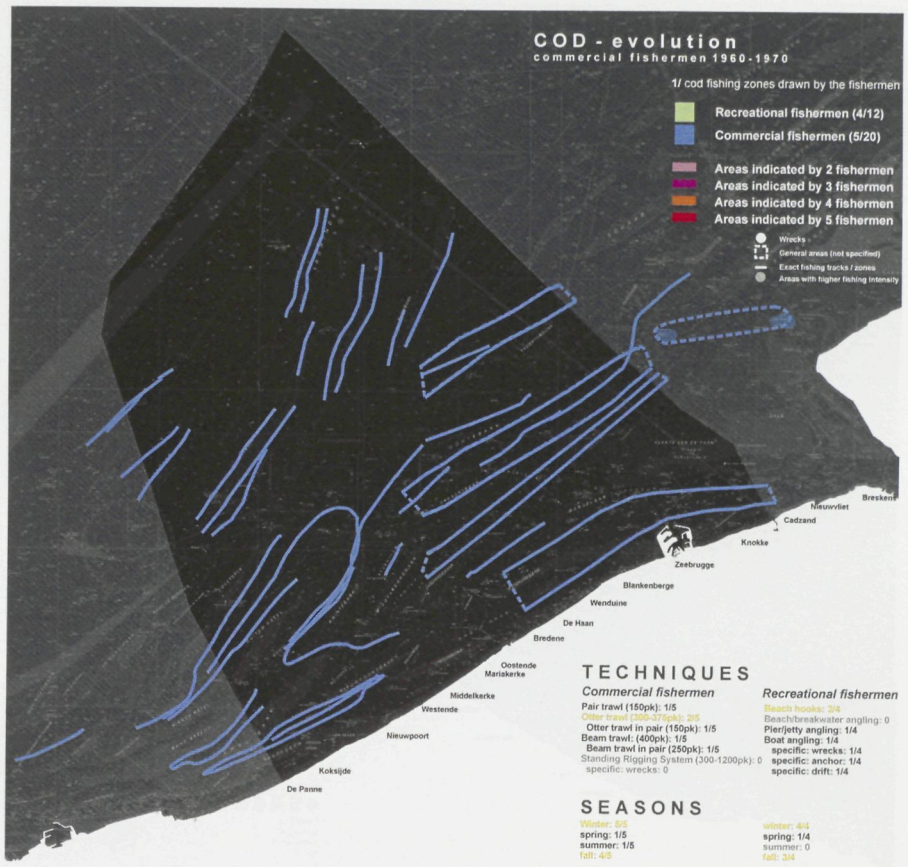


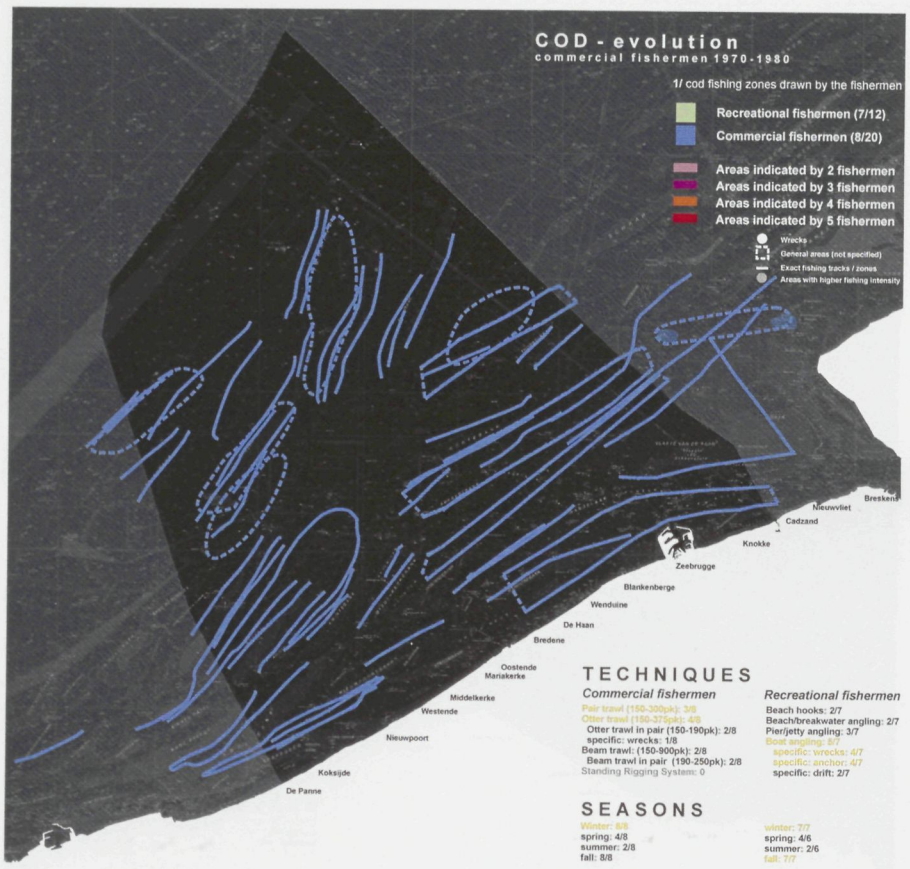


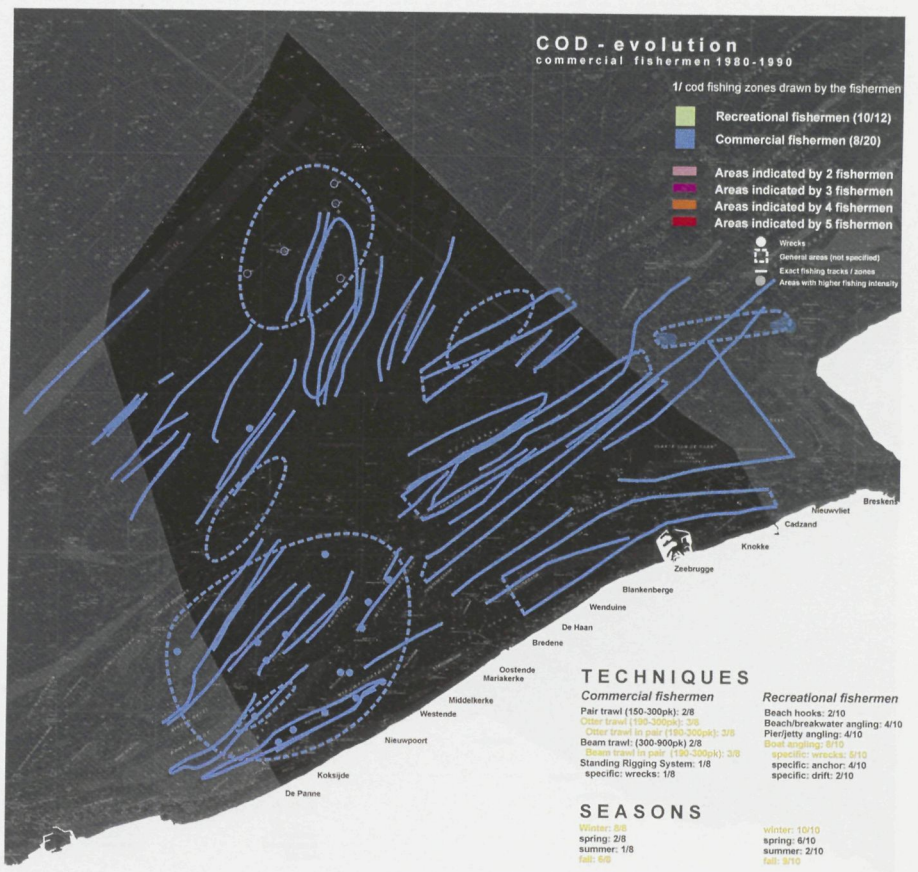


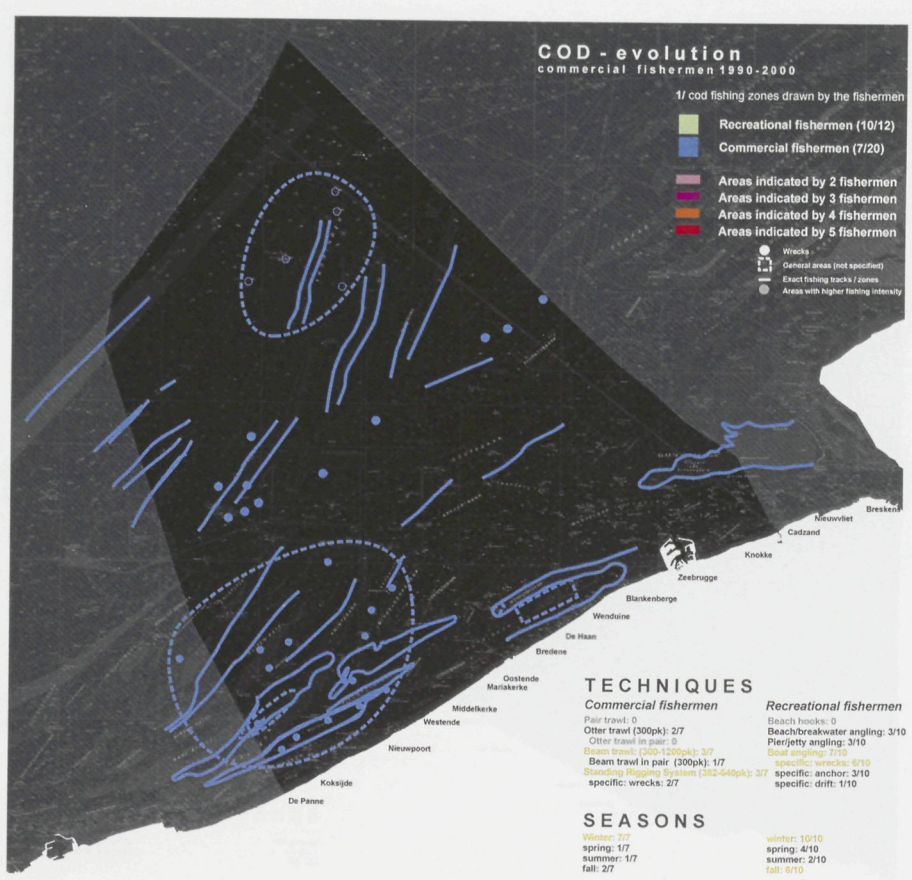
COD - evolution
recreational fishermen 1950 - 2010

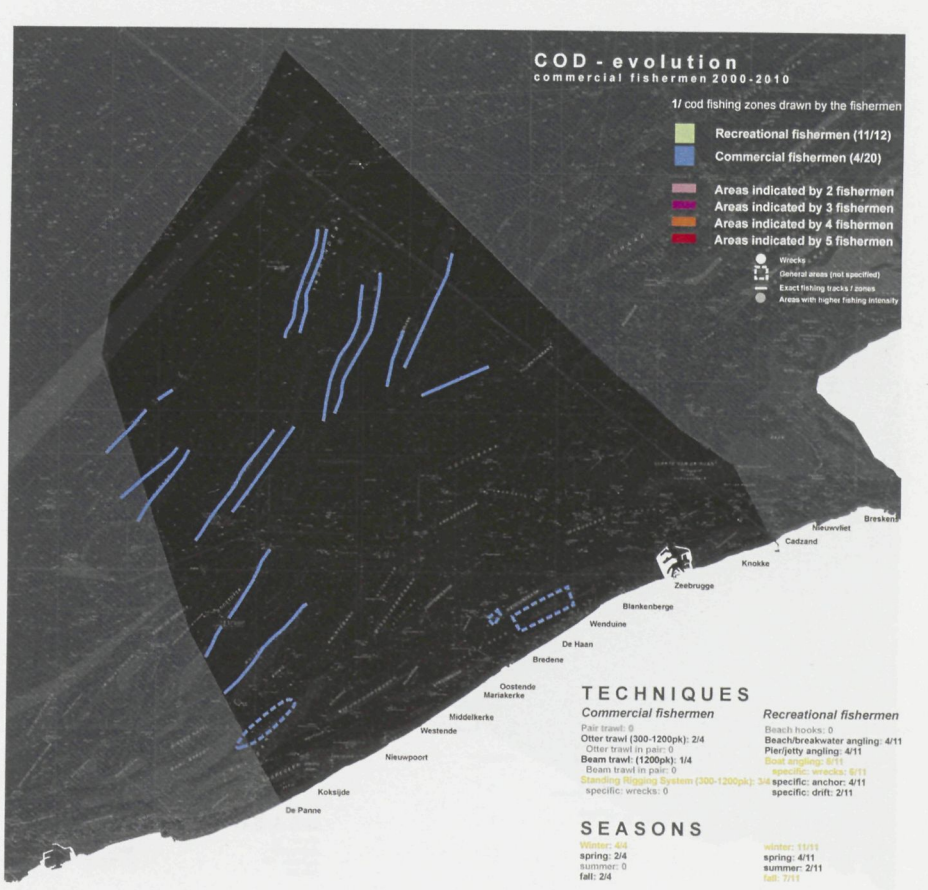






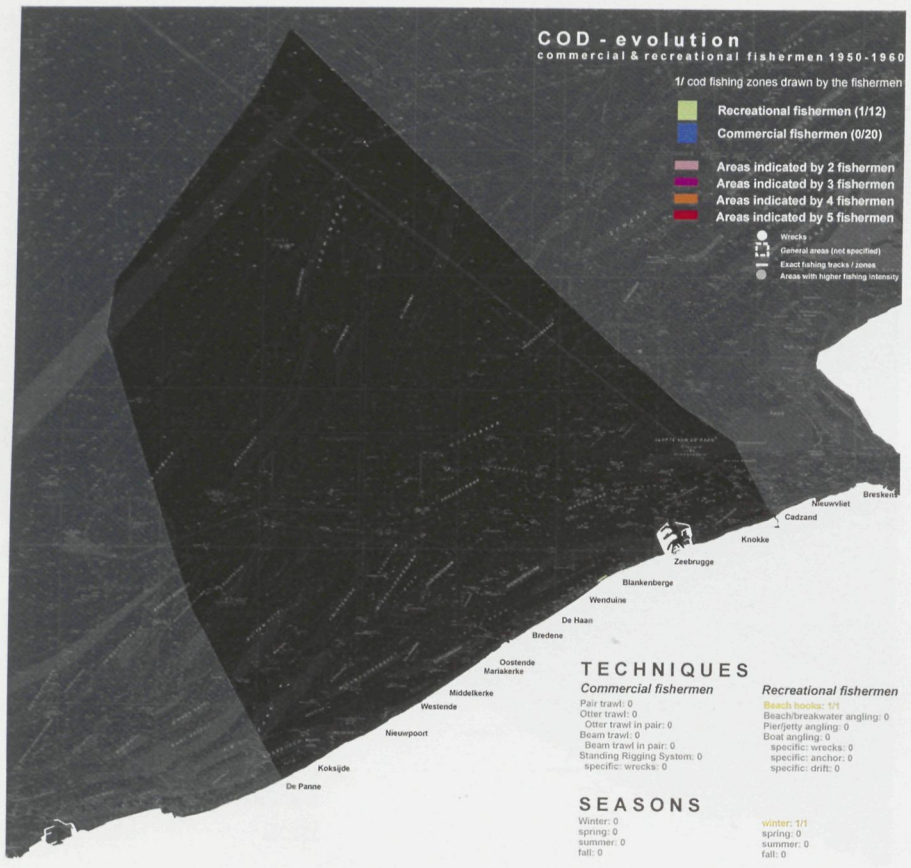


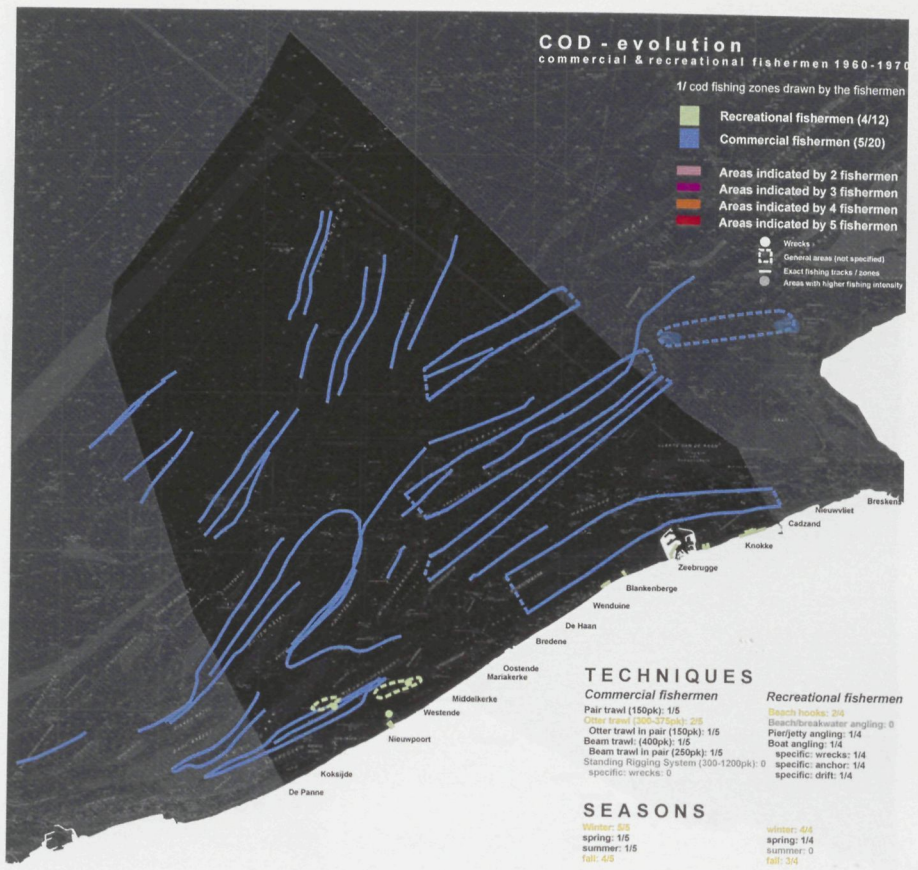


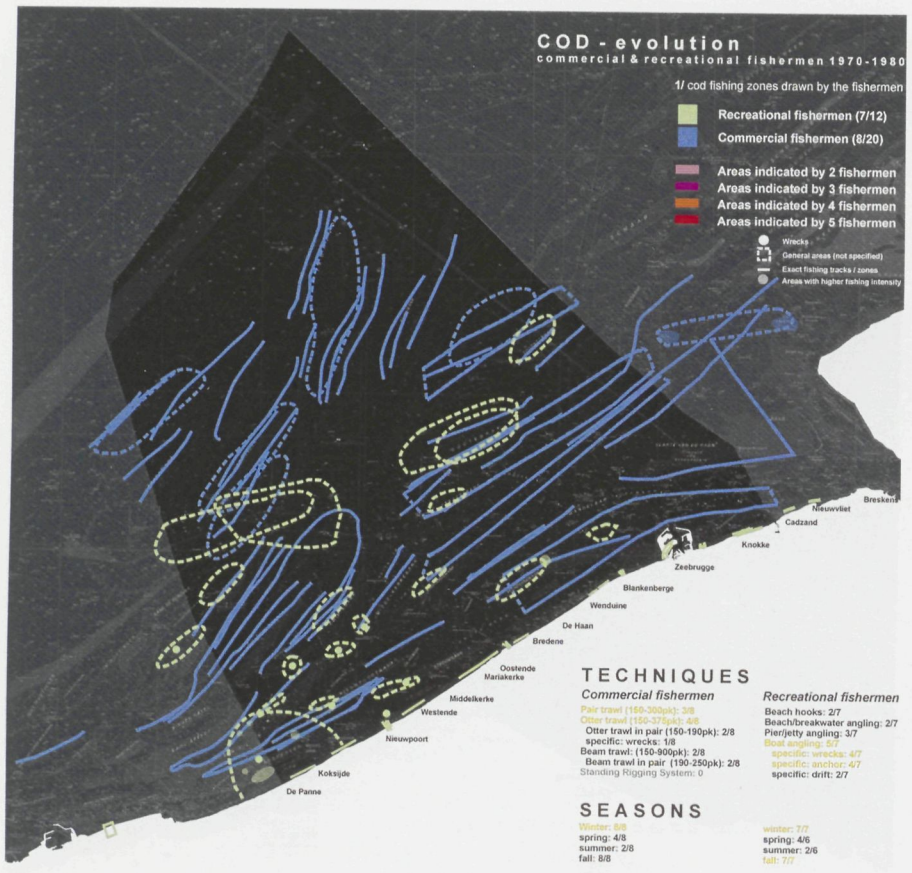


COD - evolution

commercial fishermen 1950 - 2010

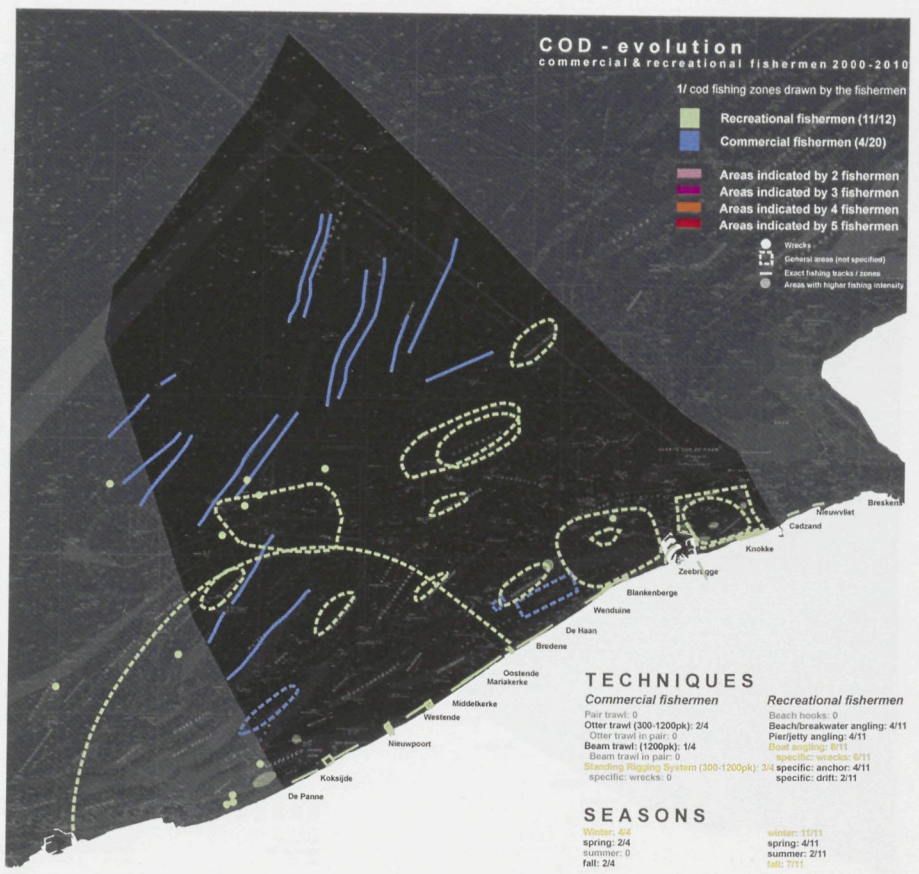






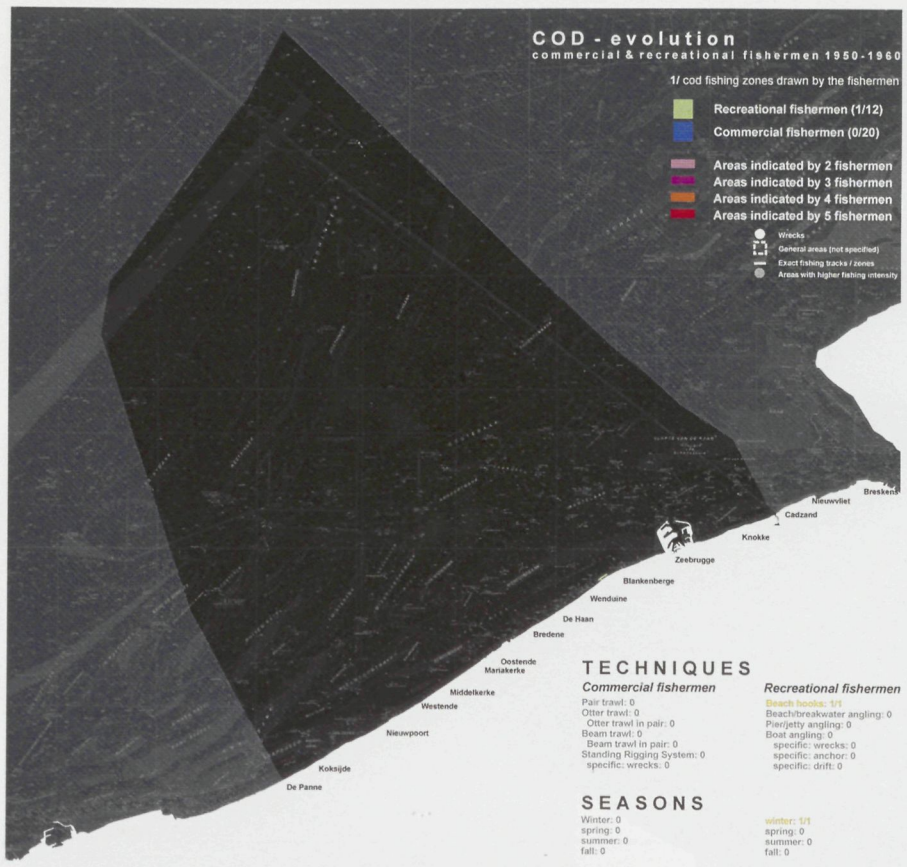


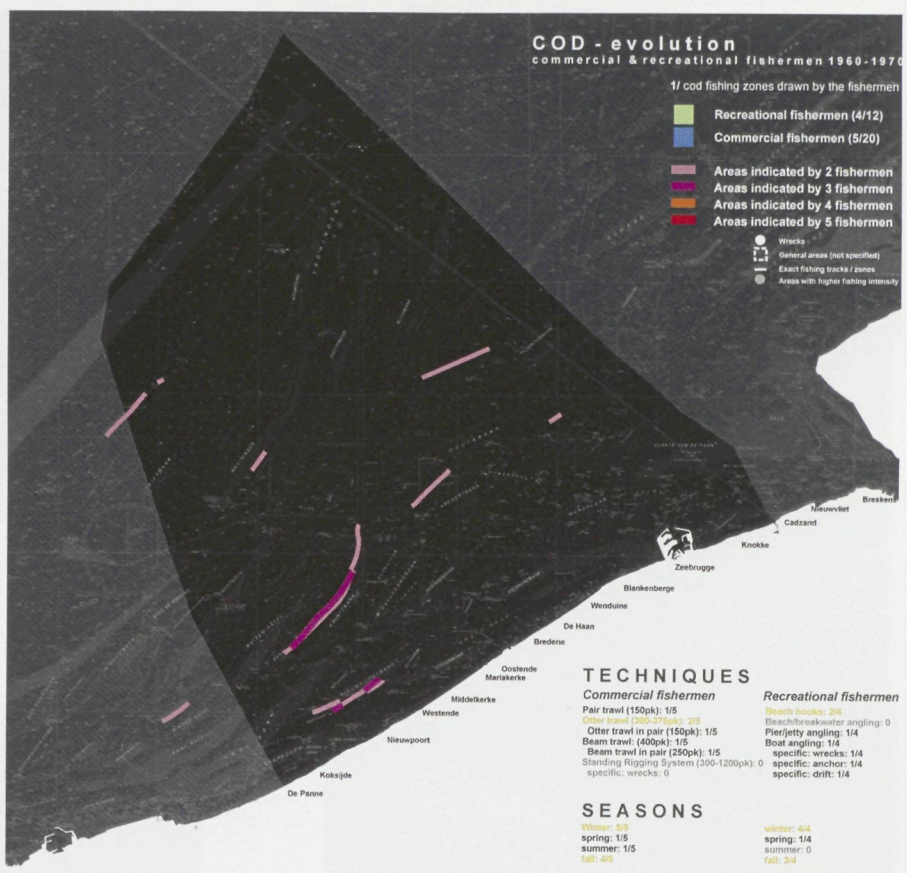


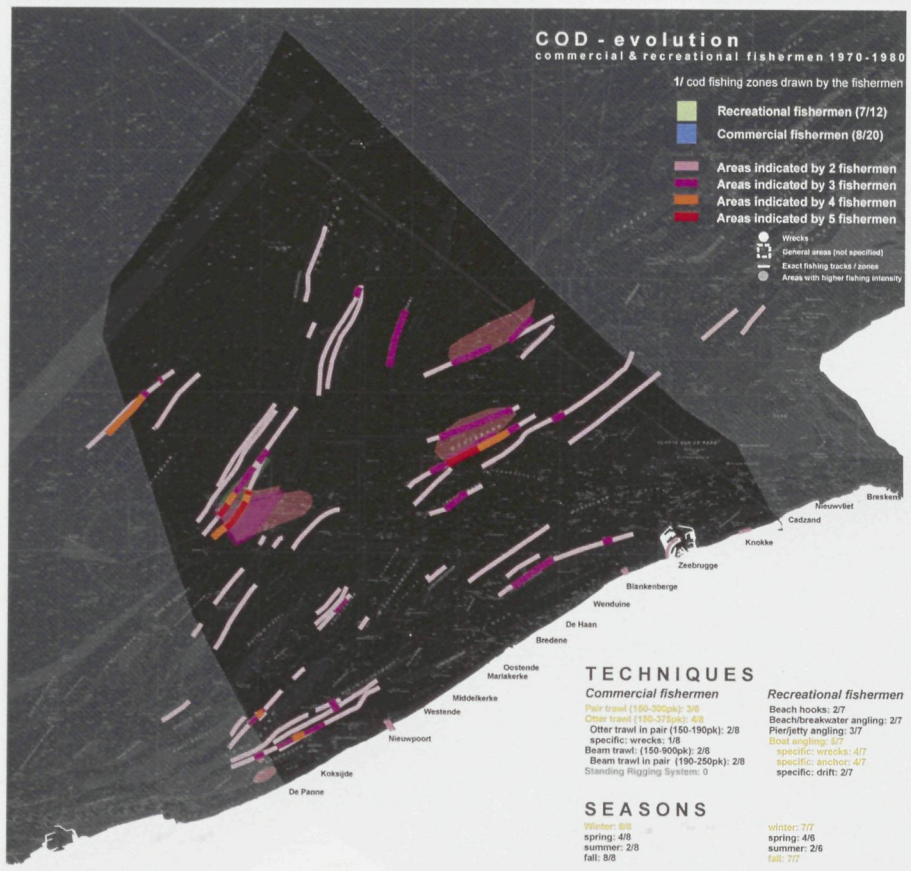


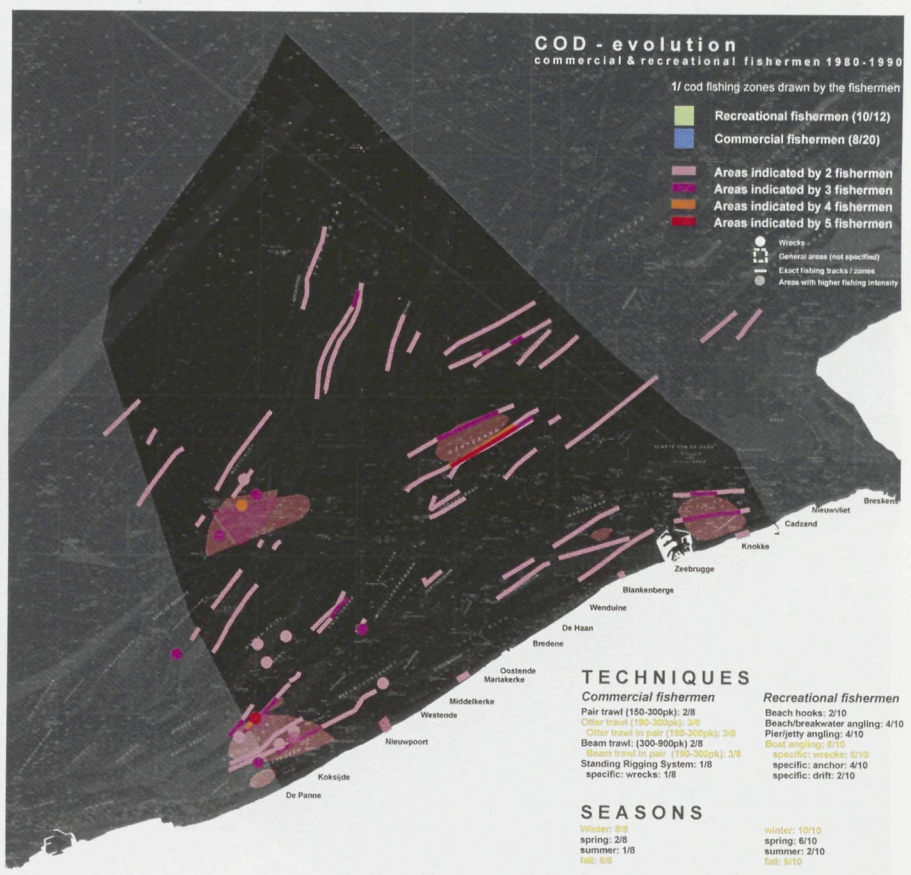
COD - evolution

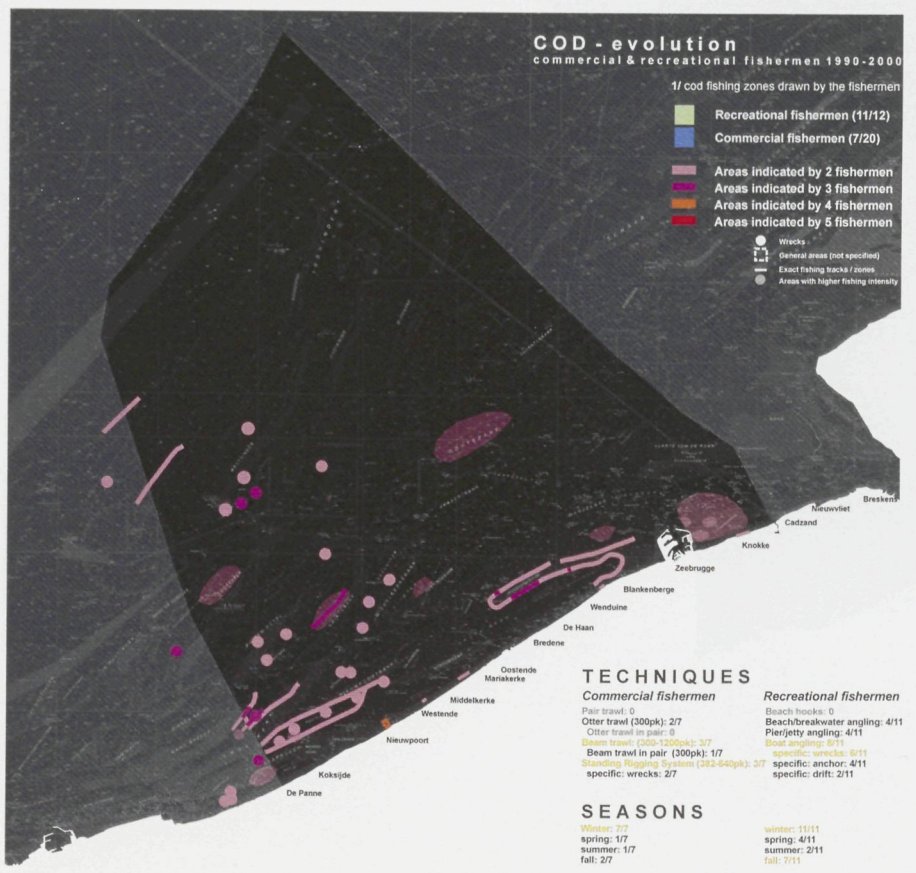
commercial & recreational fishermen 1950 - 2010

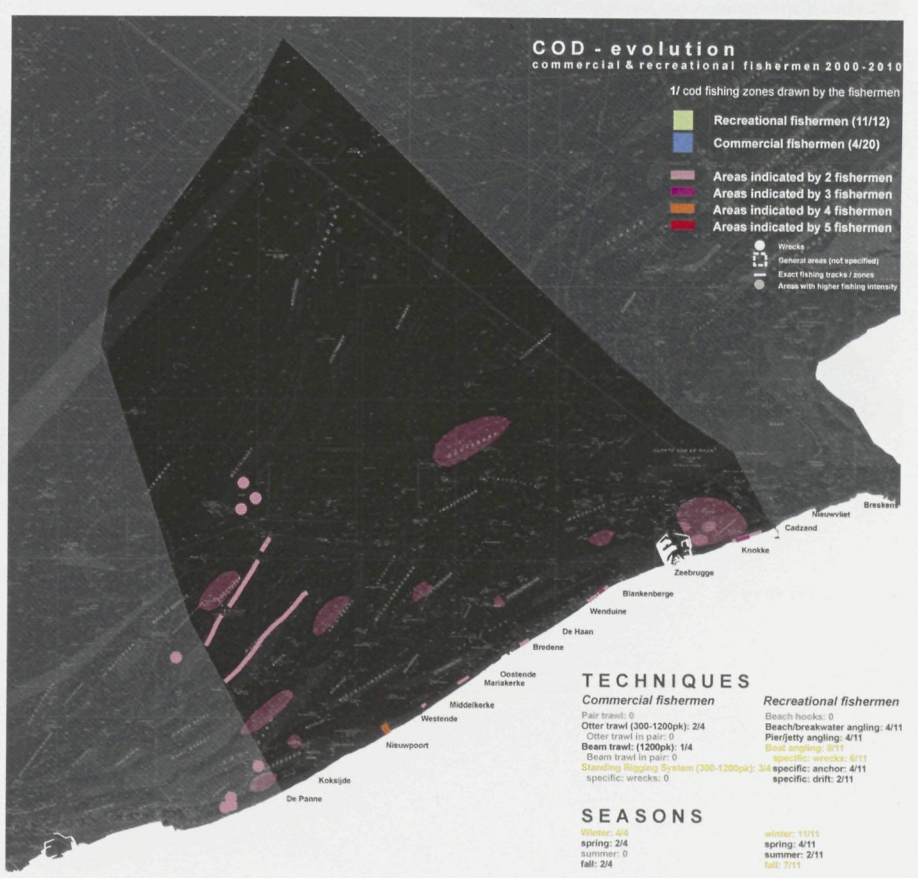








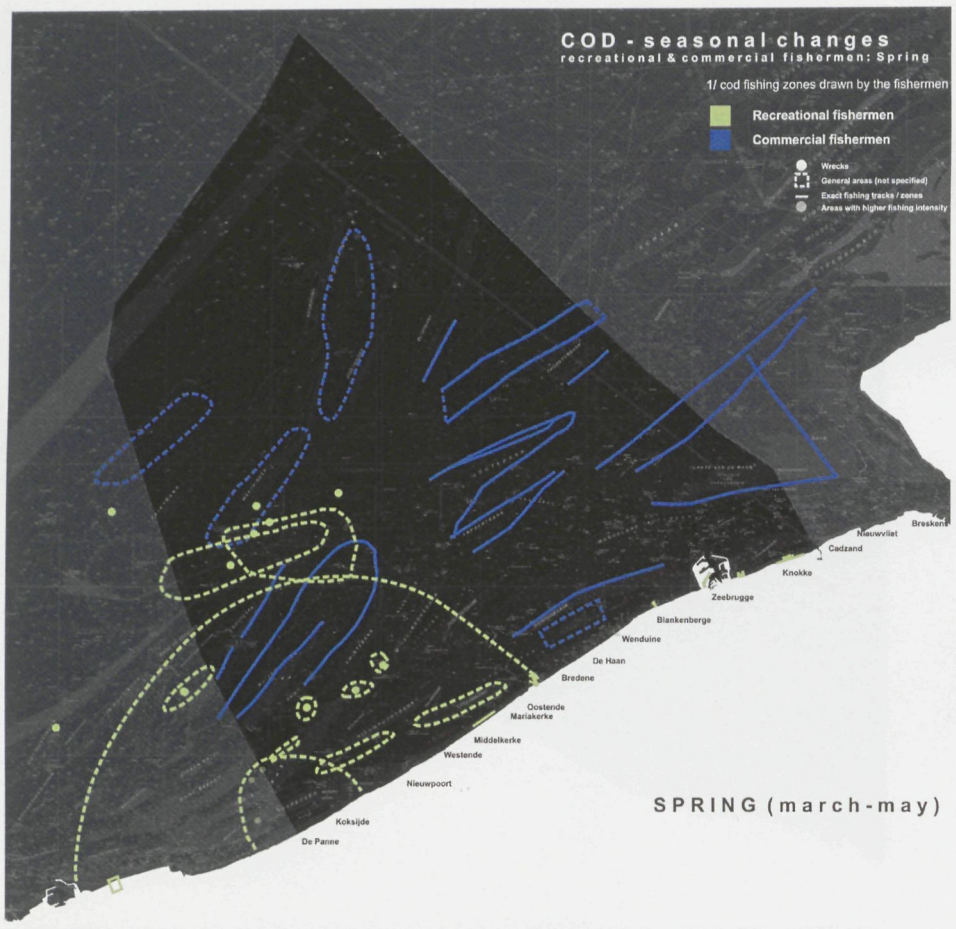




COD - evolution

commercial & recreational fishermen 1950 - 2010

areas fished by 2 or more fishermen







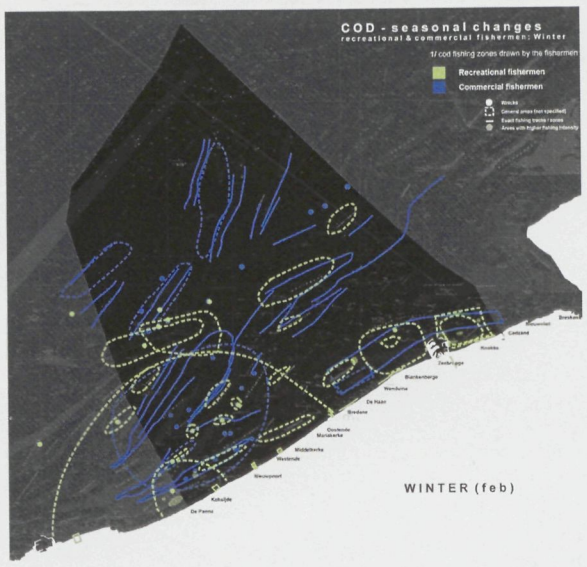


COD - seasonal changes

commercial & recreational fishermen 1950 - 2010



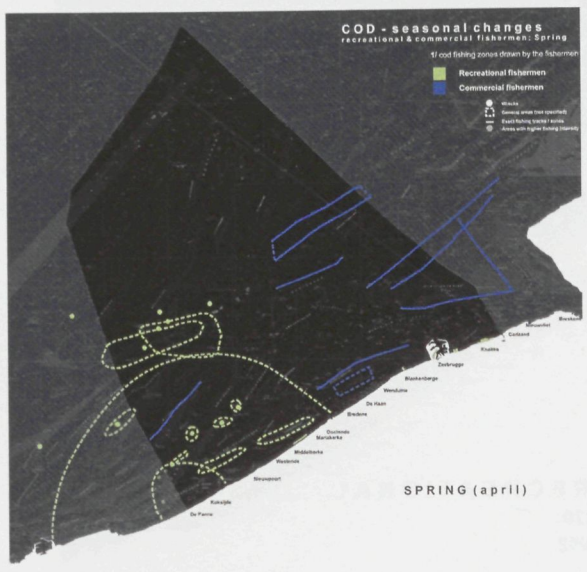
WINTER (jan)



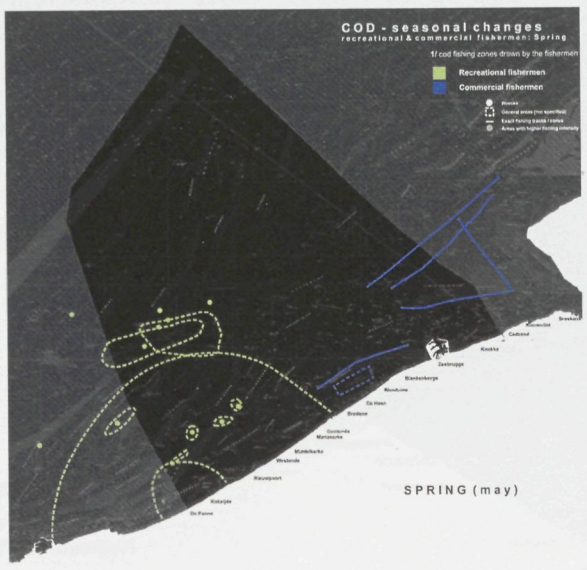
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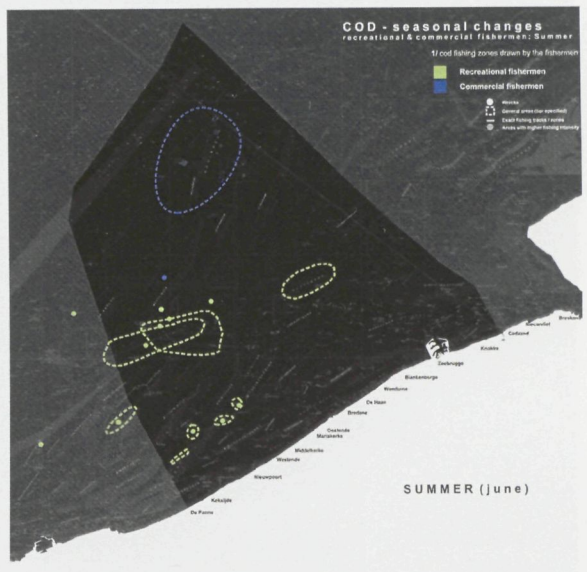
SPRING (march)



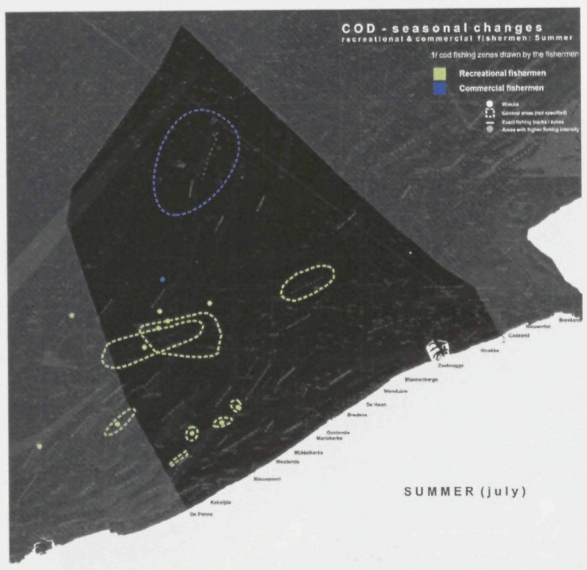
SPRING (april)



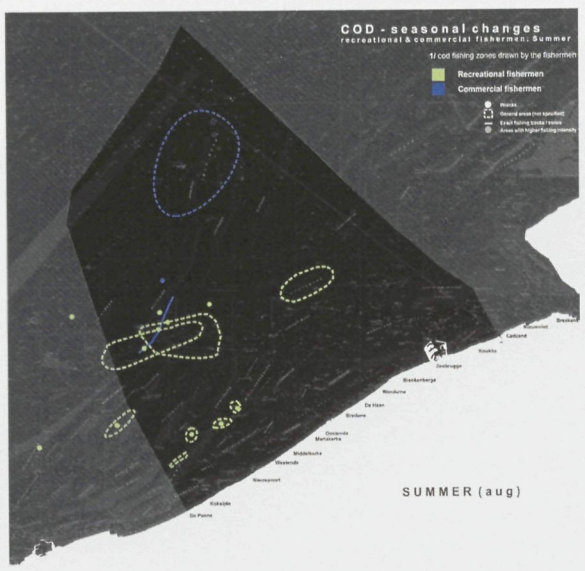
SPRING (may)



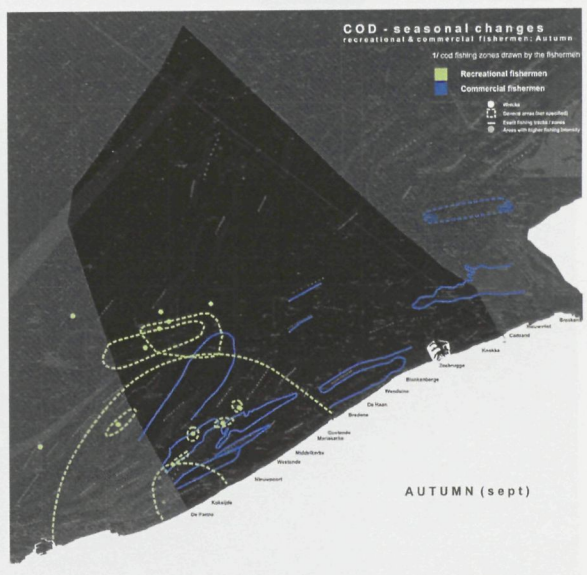
SUMMER (june)



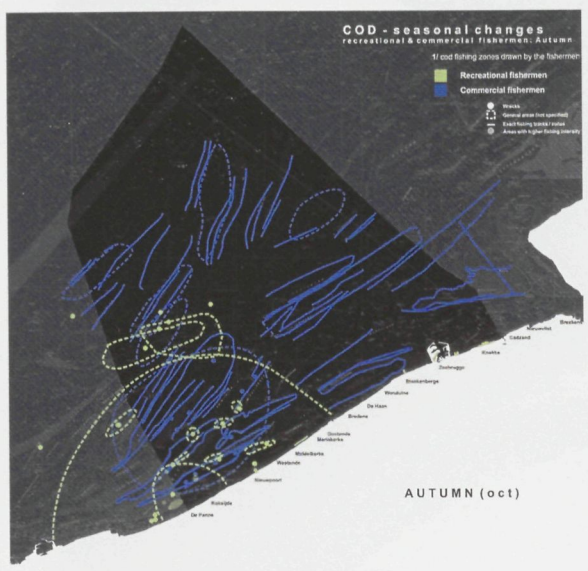
SUMMER (july)



SUMMER (aug)



AUTUMN (sept)



AUTUMN (oct)



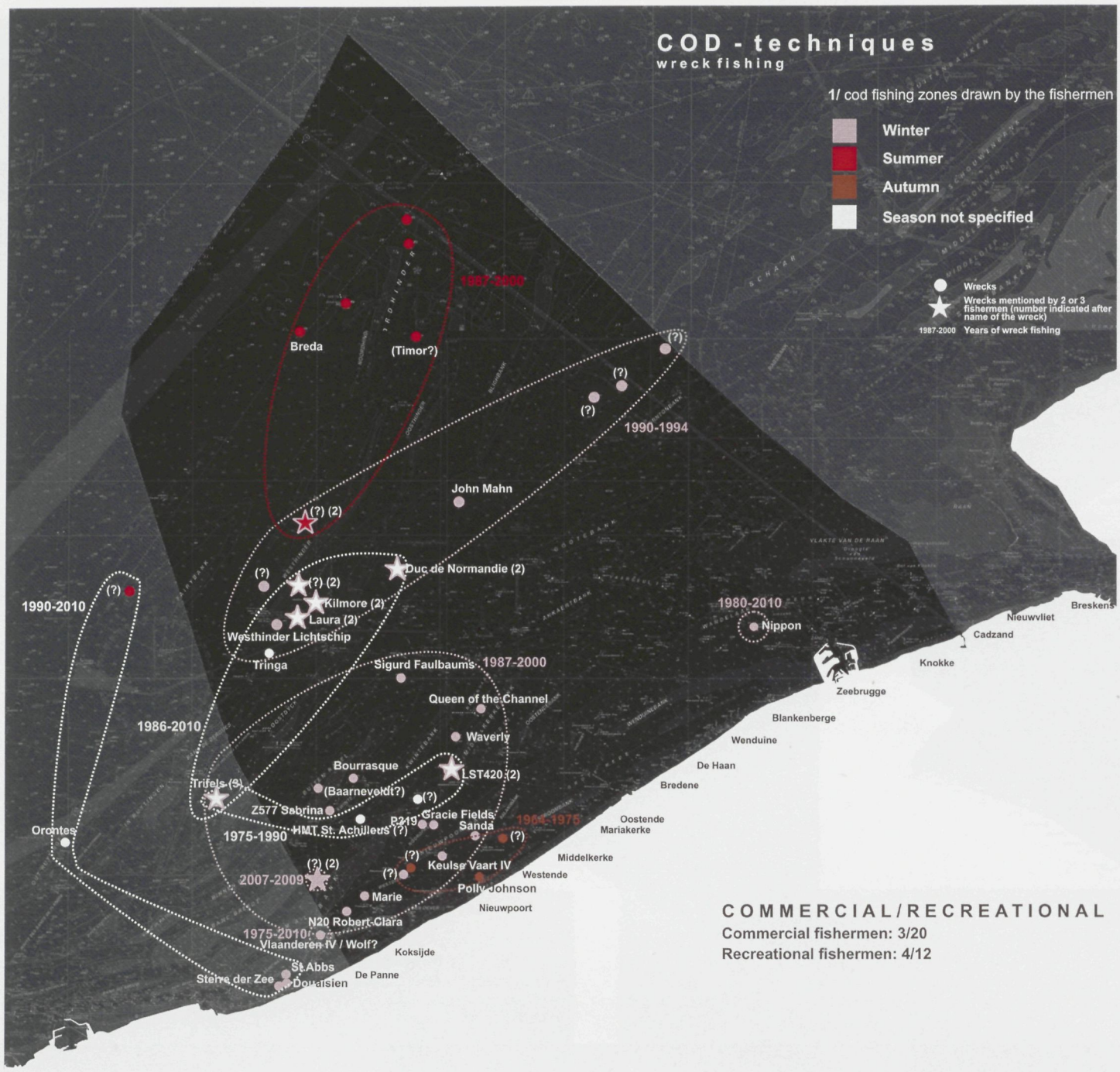
AUTUMN (nov)



WINTER (dec)

COD - seasonal changes
january-december

commercial & recreational fishermen 1950 - 2010



COMMERCIAL/RECREATIONAL
Commercial fishermen: 3/20
Recreational fishermen: 4/12

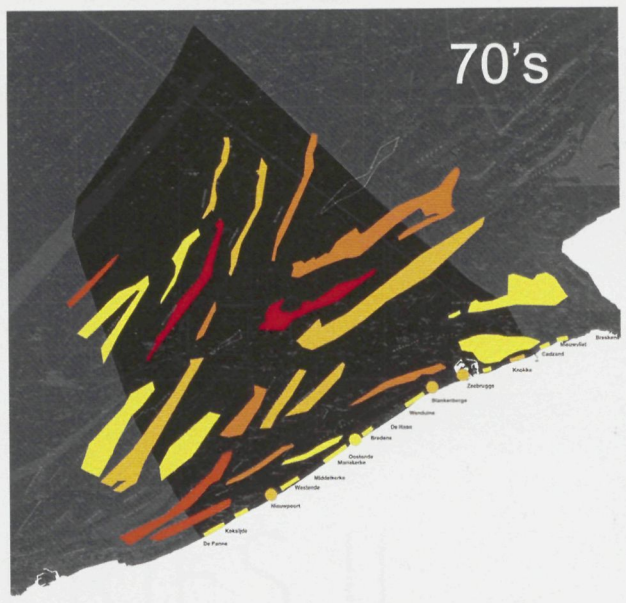


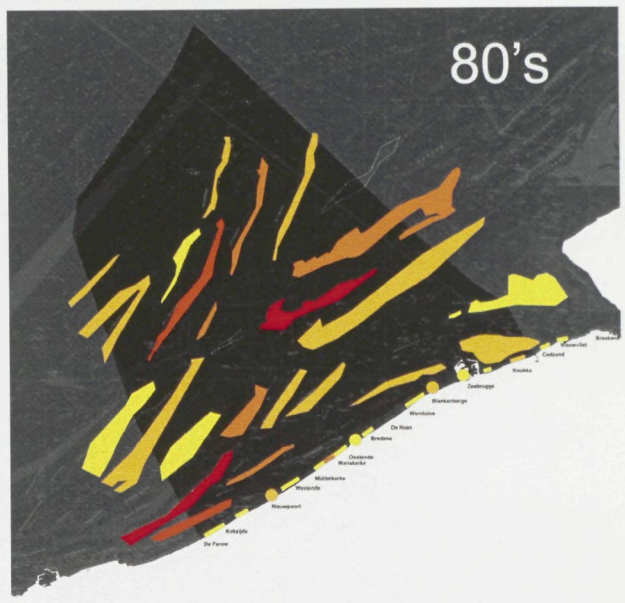
COMMERCIAL/RECREATIONAL
Commercial fishermen: 5/20
Recreational fishermen: 0/12

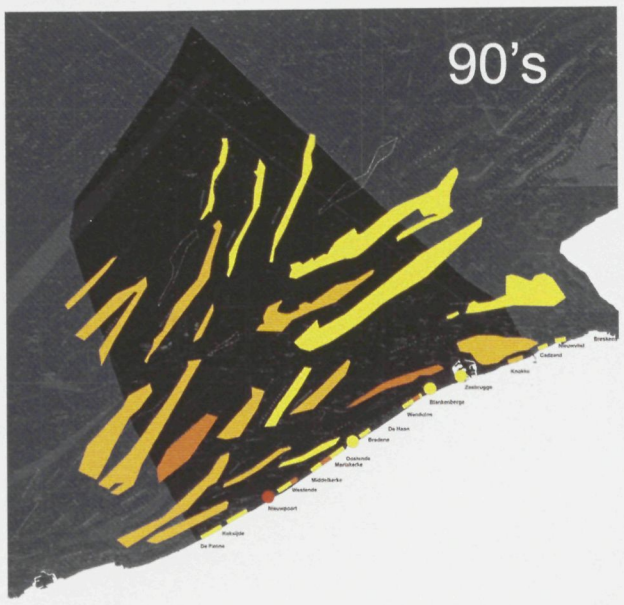
COD - technique

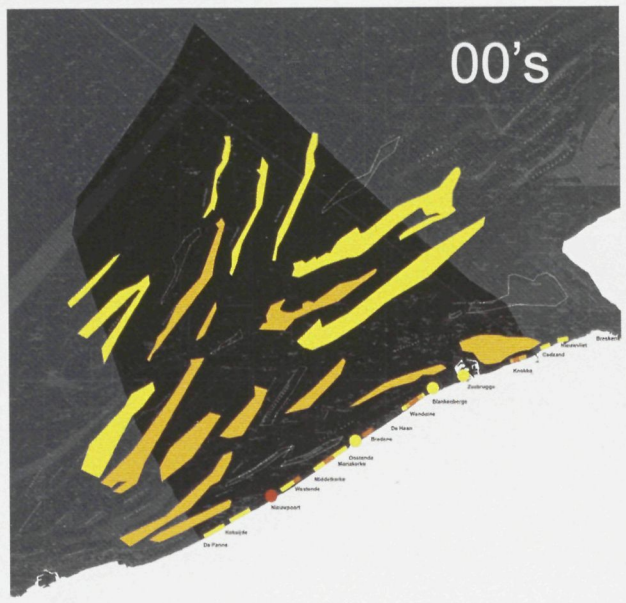
commercial & recreational fishermen 1950 - 2010











COD - EVOLUTION OF FISHING ZONES

commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011









COD - SEASONAL CHANGES

commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

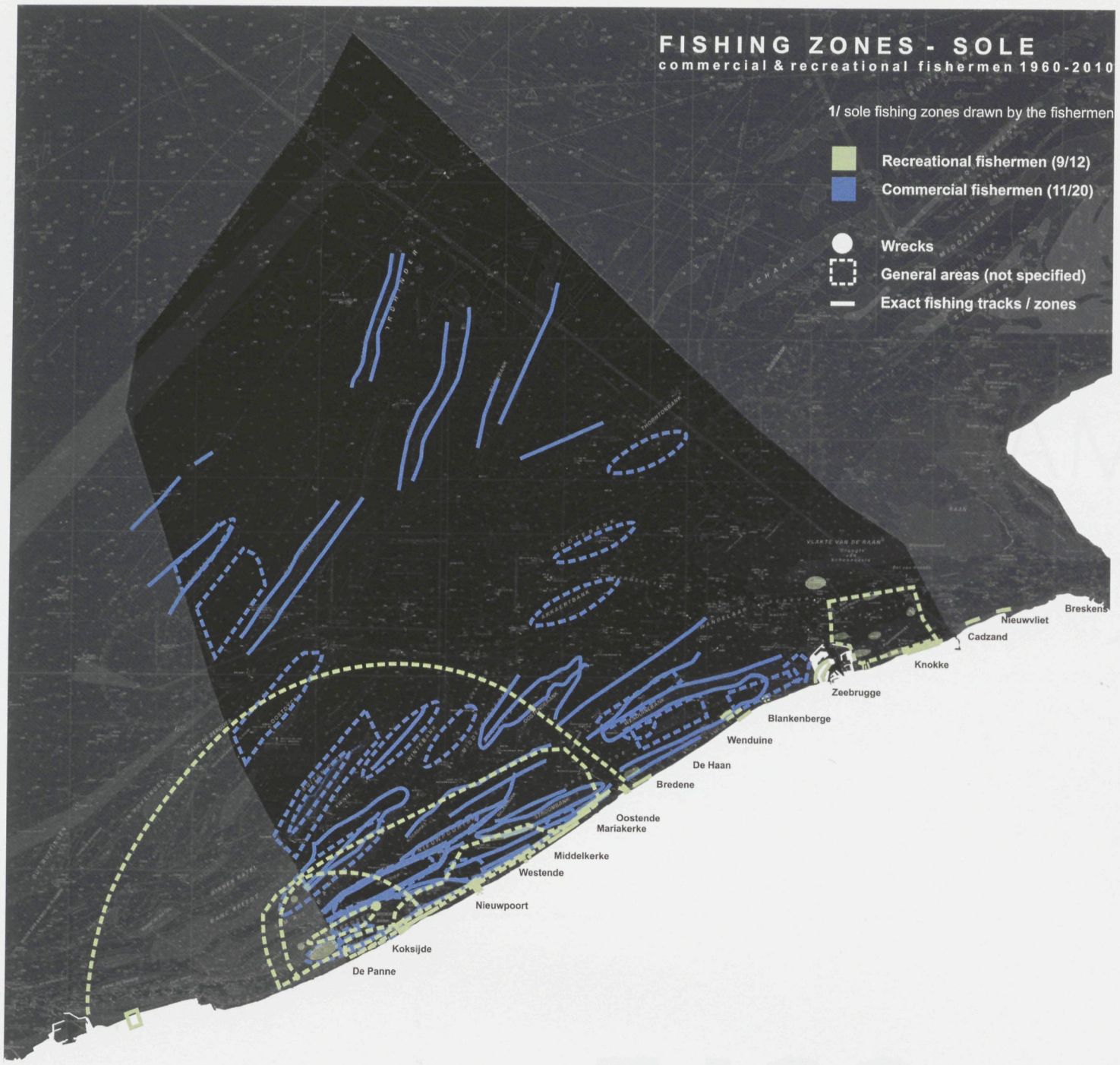
LECOFISH SEPTEMBER 2011

COD - structure maps

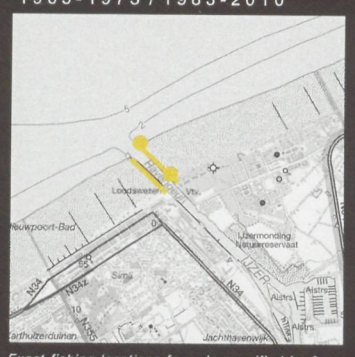
commercial & recreational fishermen 1950 - 2010

MAPS SERIES II

SOLE

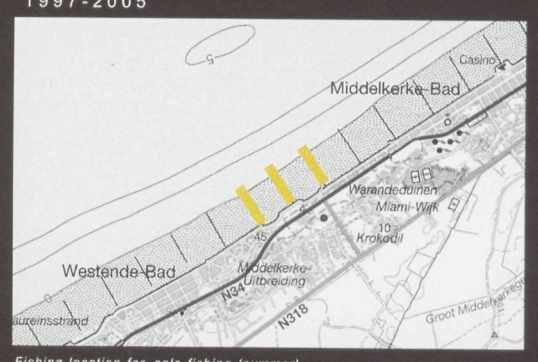


Nieuwpoort
1965-1975 / 1983-2010



Exact fishing locations for sole specified by 2 recreational fishermen, in may (other fisherman mentions 'summer')

Westende-Middelkerke
1997-2005



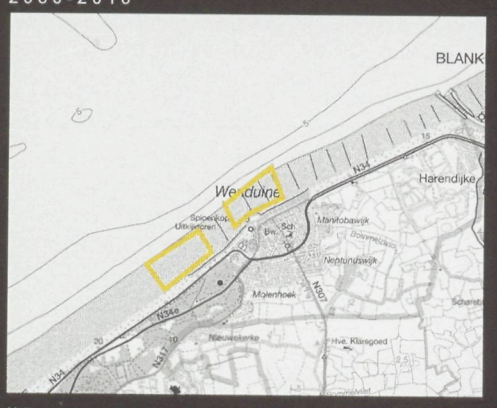
Fishing location for sole fishing (summer)

Oostende
1970-2010



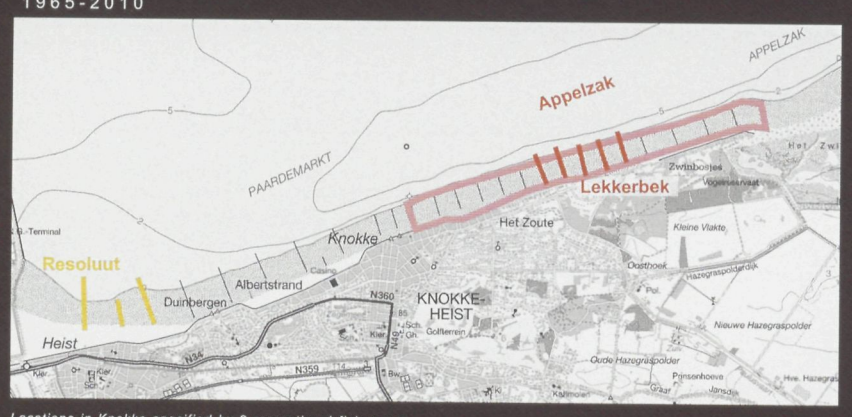
Fishing location for sole fishing in summer time (starting in may)

De Haan-Wenduine
2000-2010



Yellow area specified as shrimp fishing area, with sole as bycatch (august-september)

Knokke-Heist
1965-2010

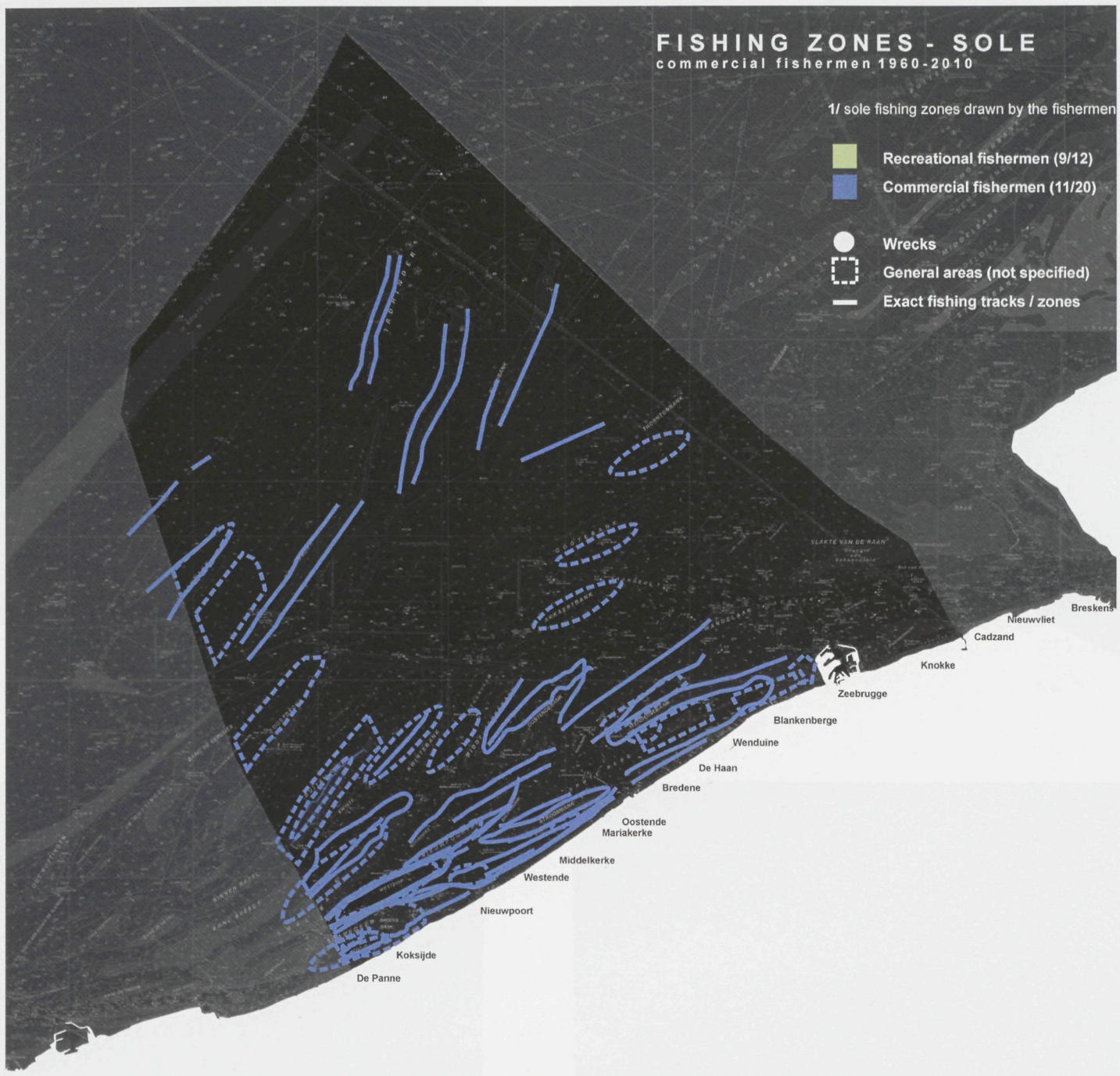


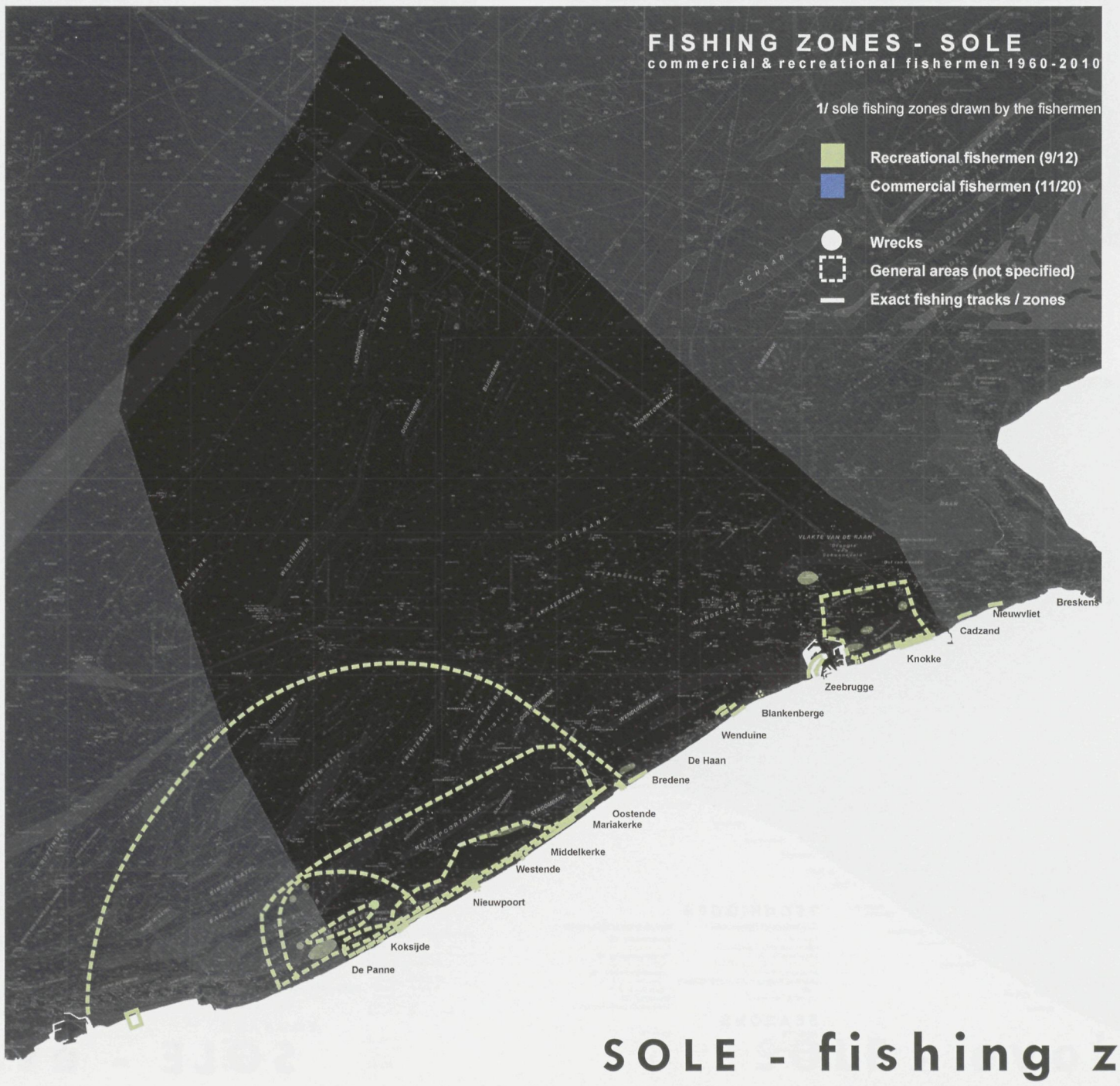
Locations in Knokke specified by 2 recreational fishermen
Fishing location for sole fishing in summer time (june-august) // yellow: 1965-1988, orange: 1965-2010, pink: 2000-2010)

FISHING ZONES - SOLE
recreational fishermen 1956-2010

1/ sole fishing zones drawn by the fishermen - detailled maps

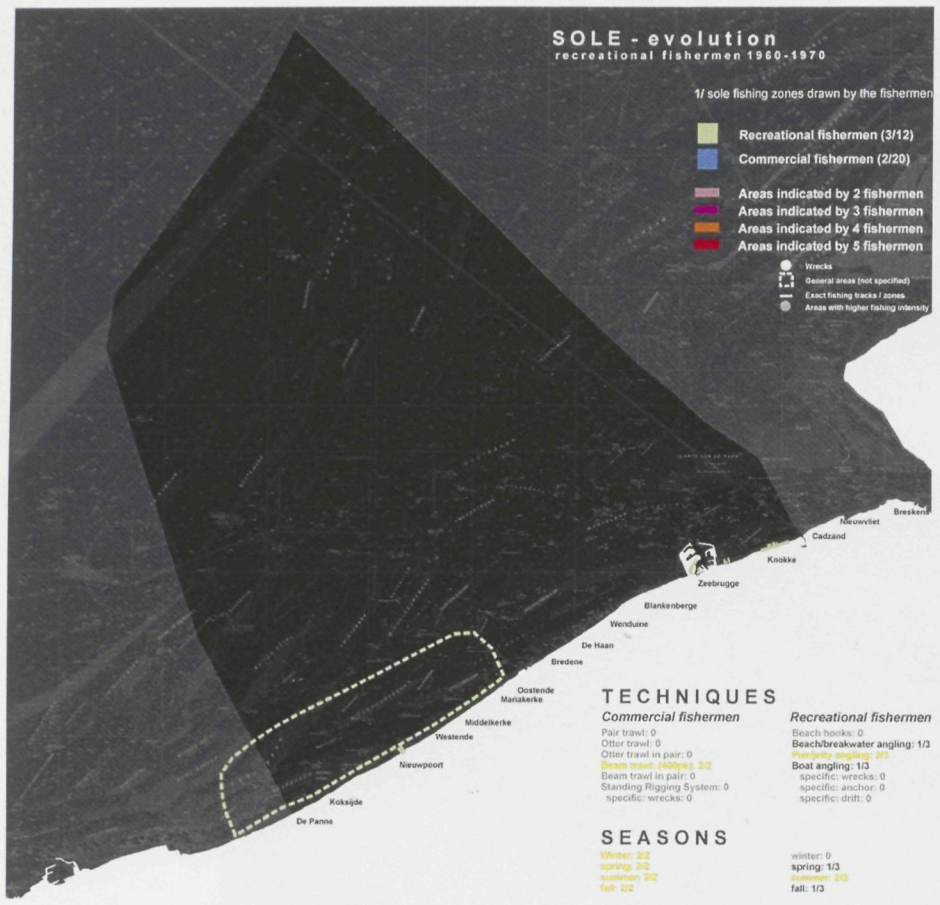
SOLE - fishing zones
commercial & recreational fishermen 1950 - 2010

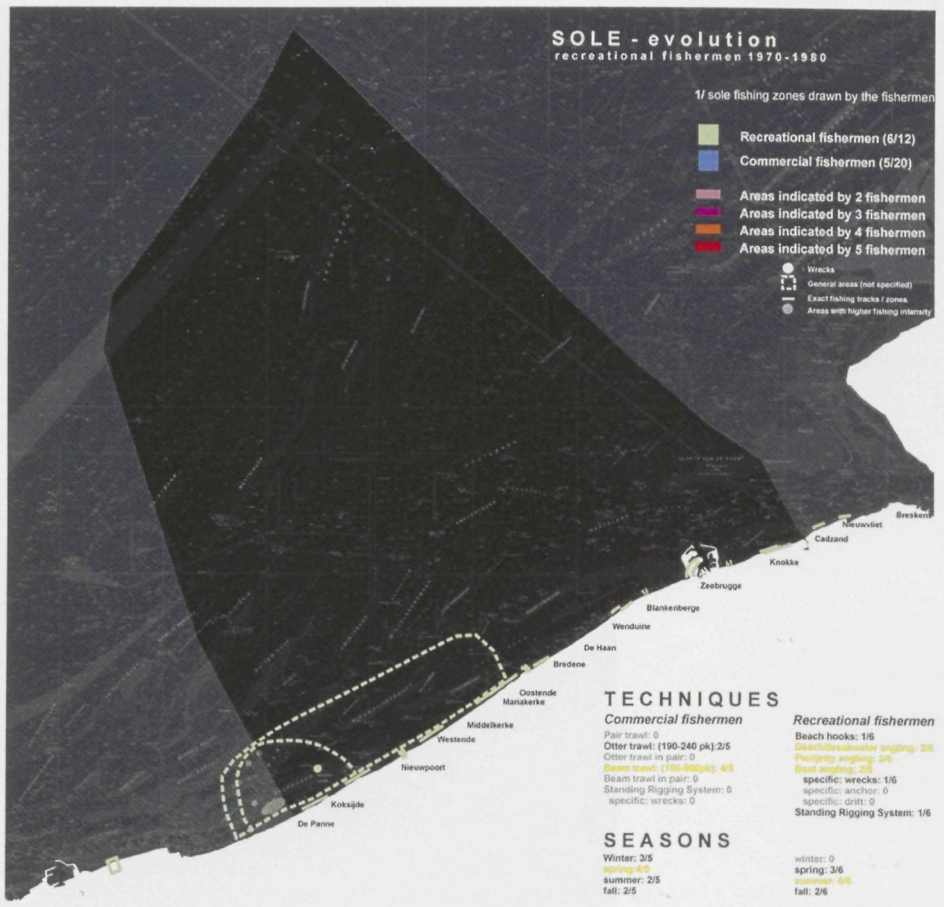


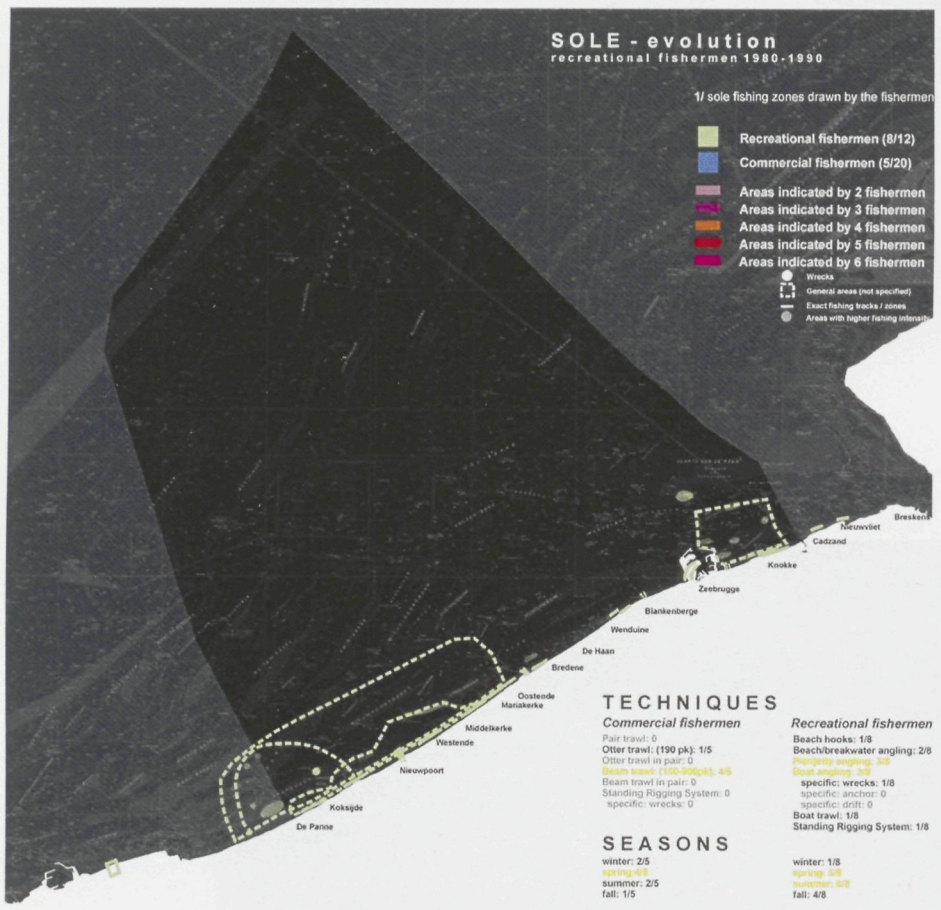


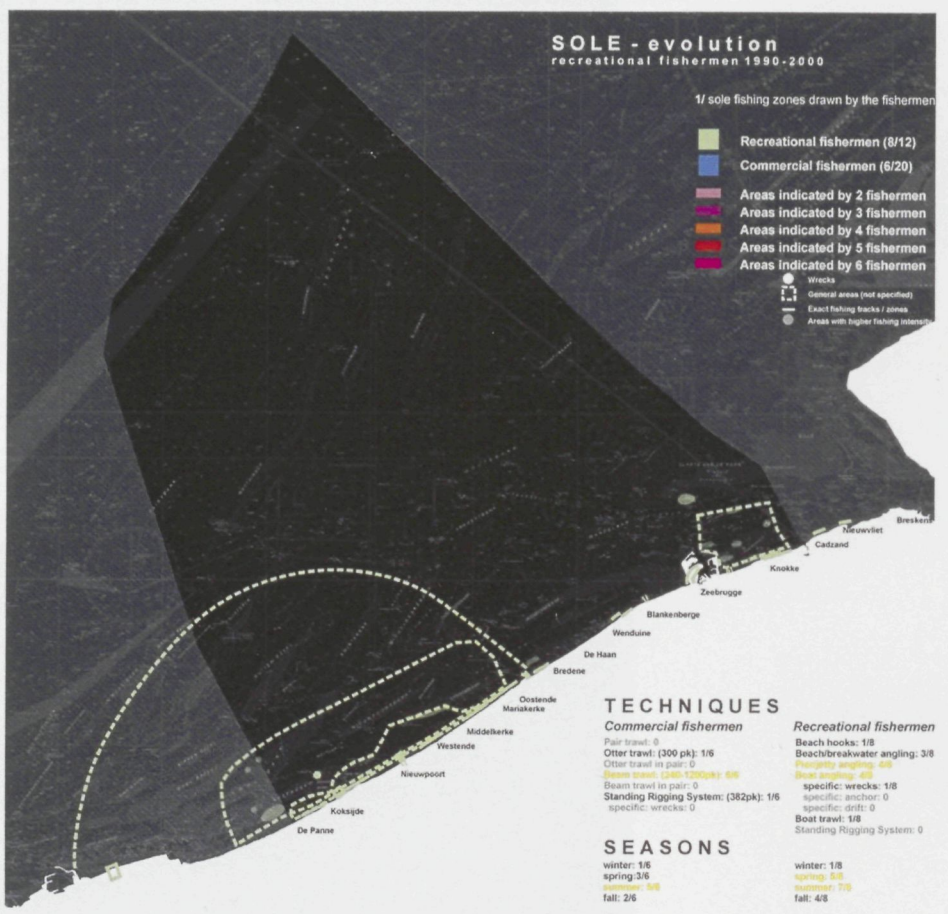
SOLE - fishing zones

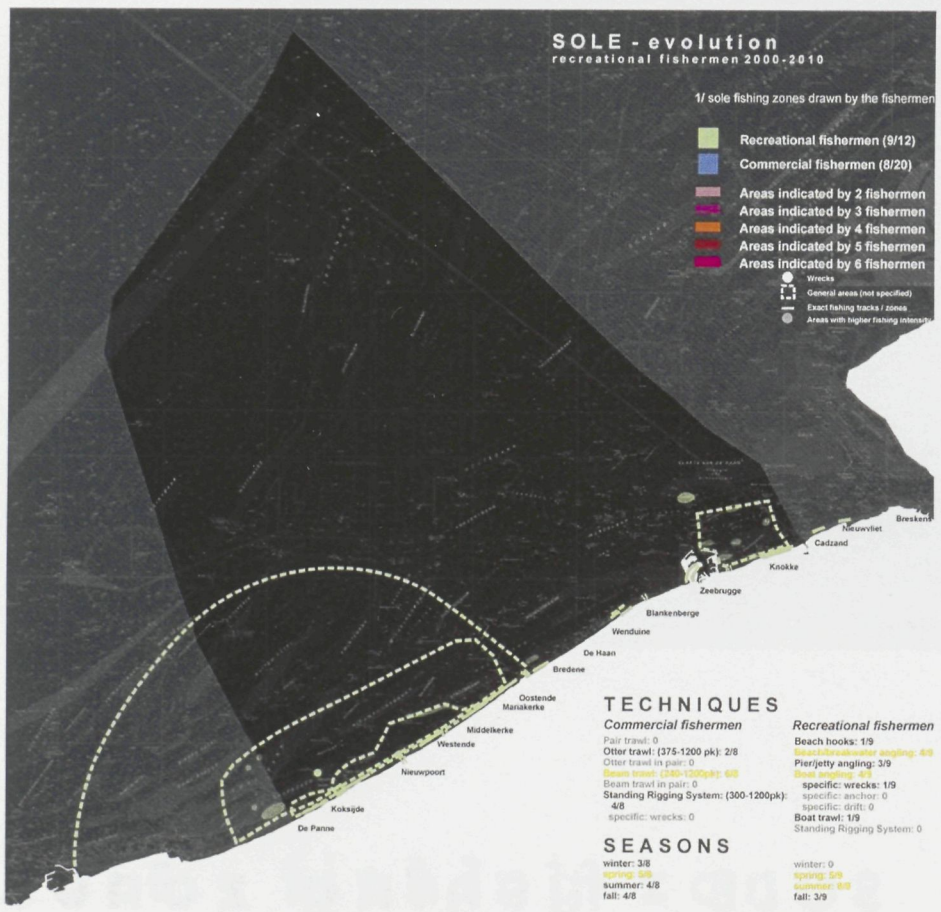
commercial & recreational fishermen 1960 - 2010



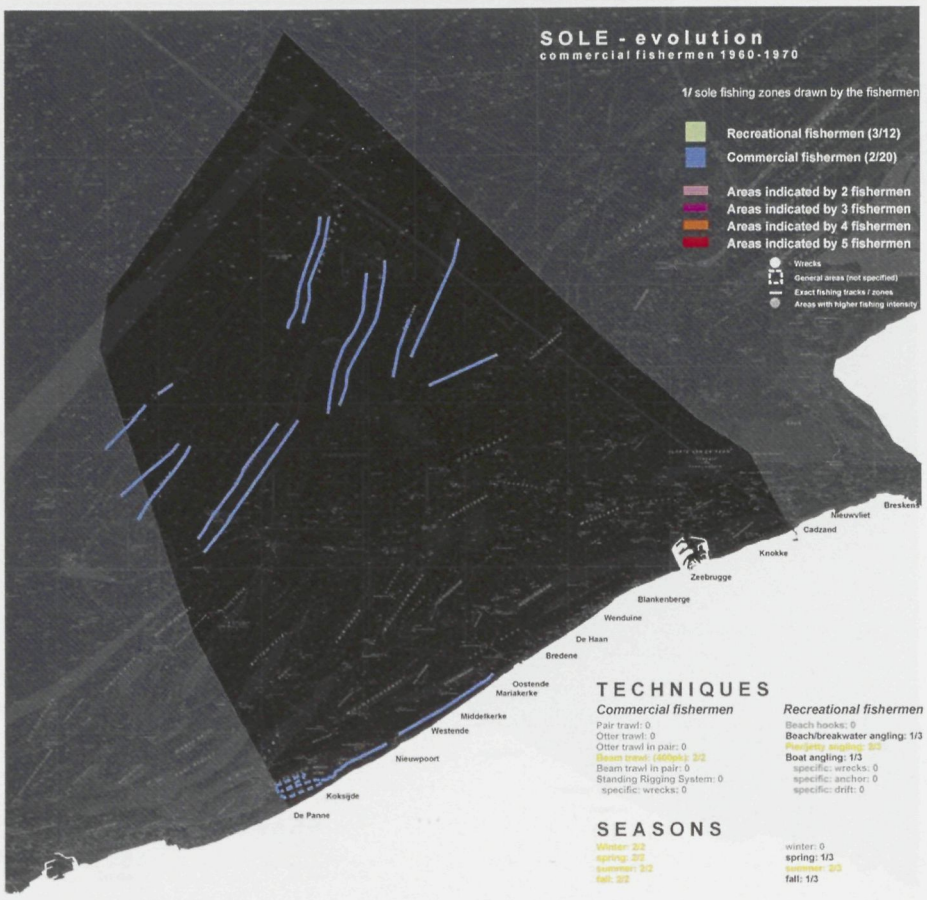


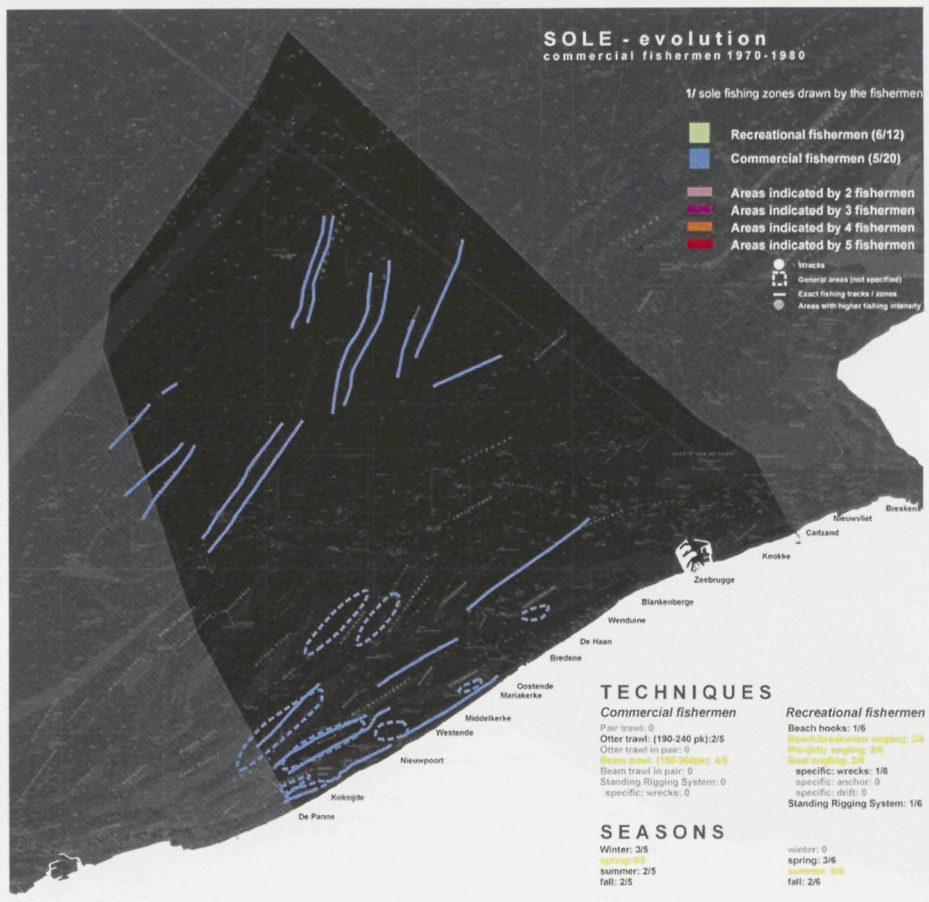


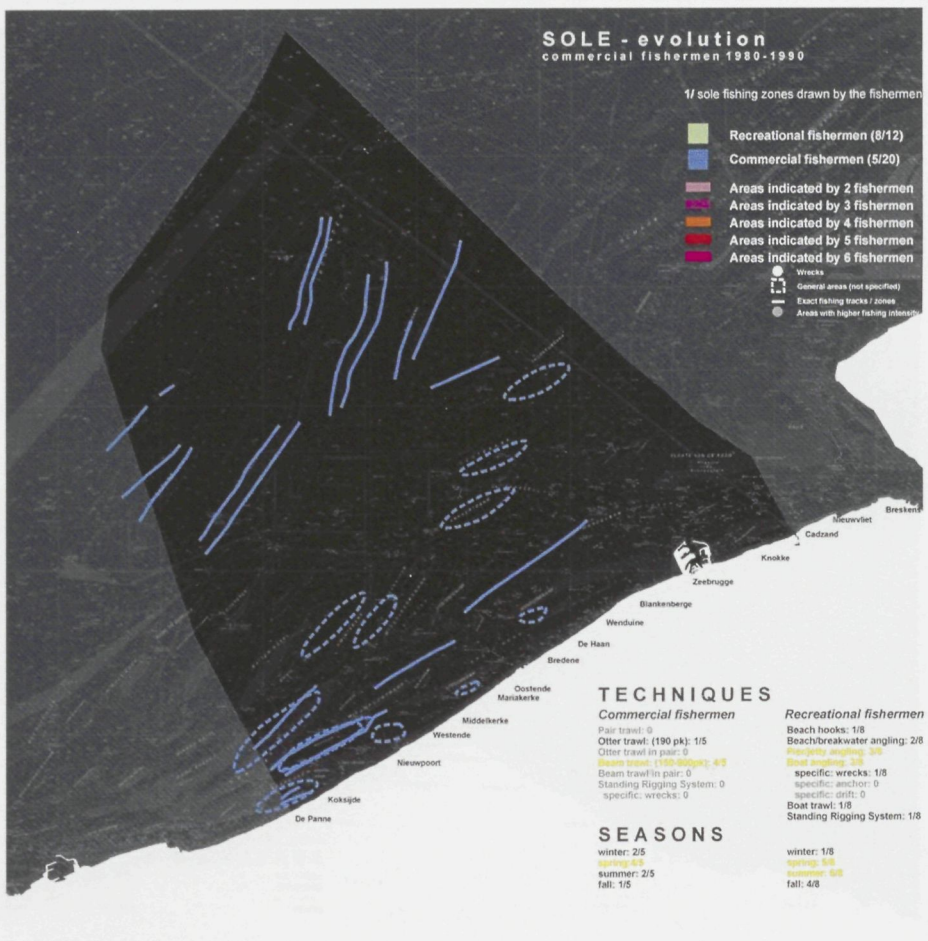


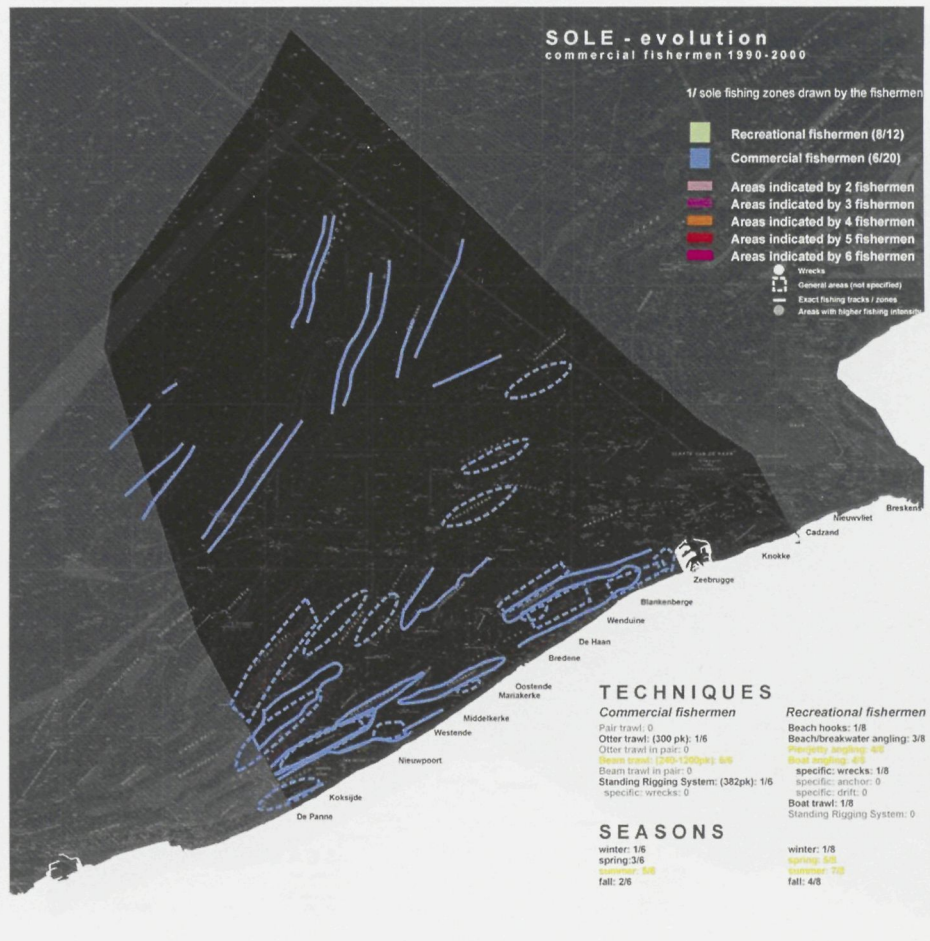


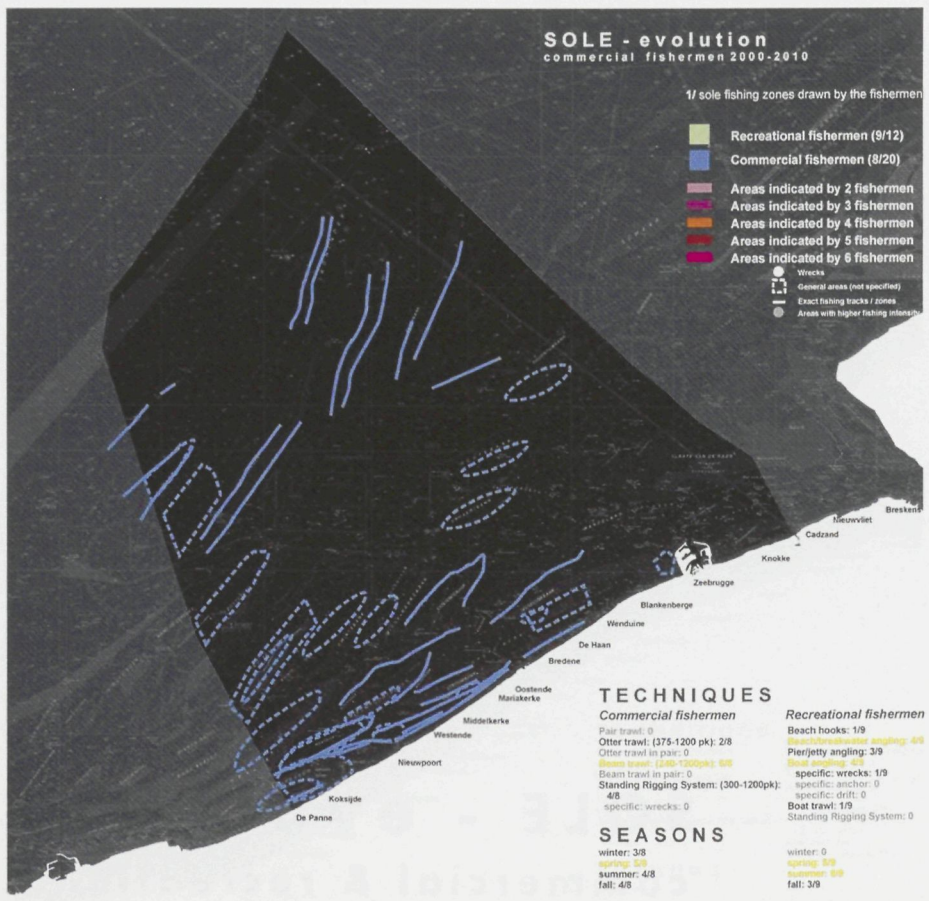
SOLE - evolution
recreational fishermen 1960 - 2010





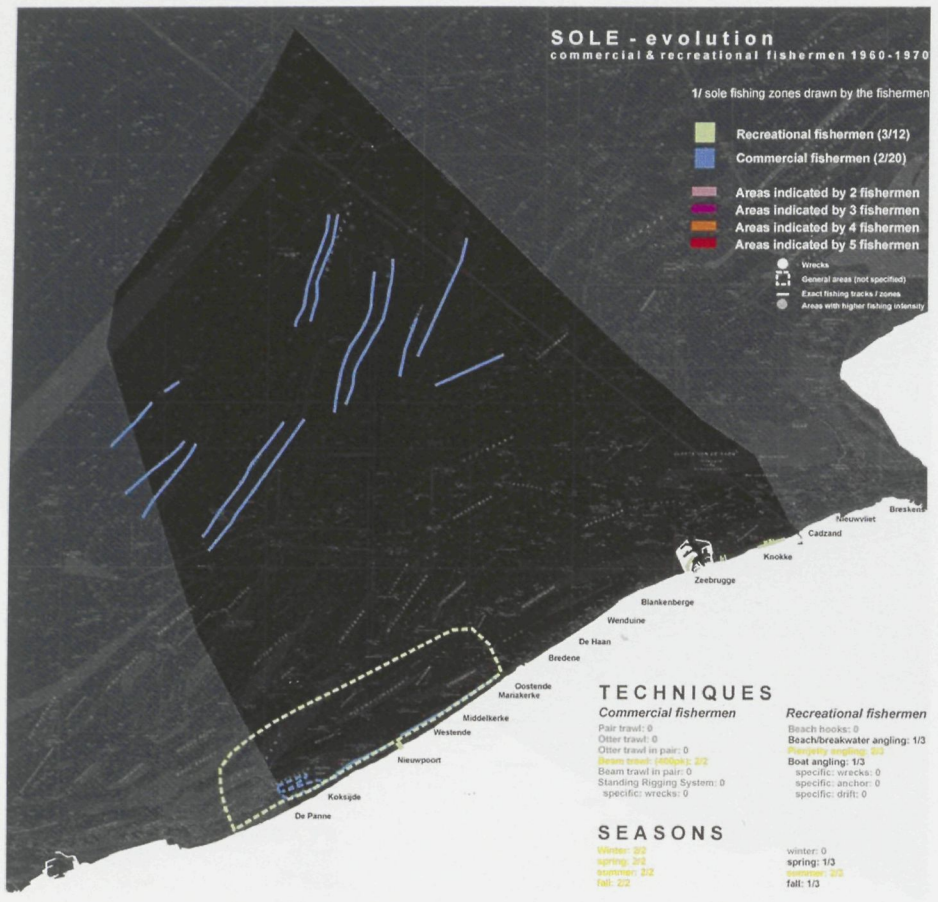


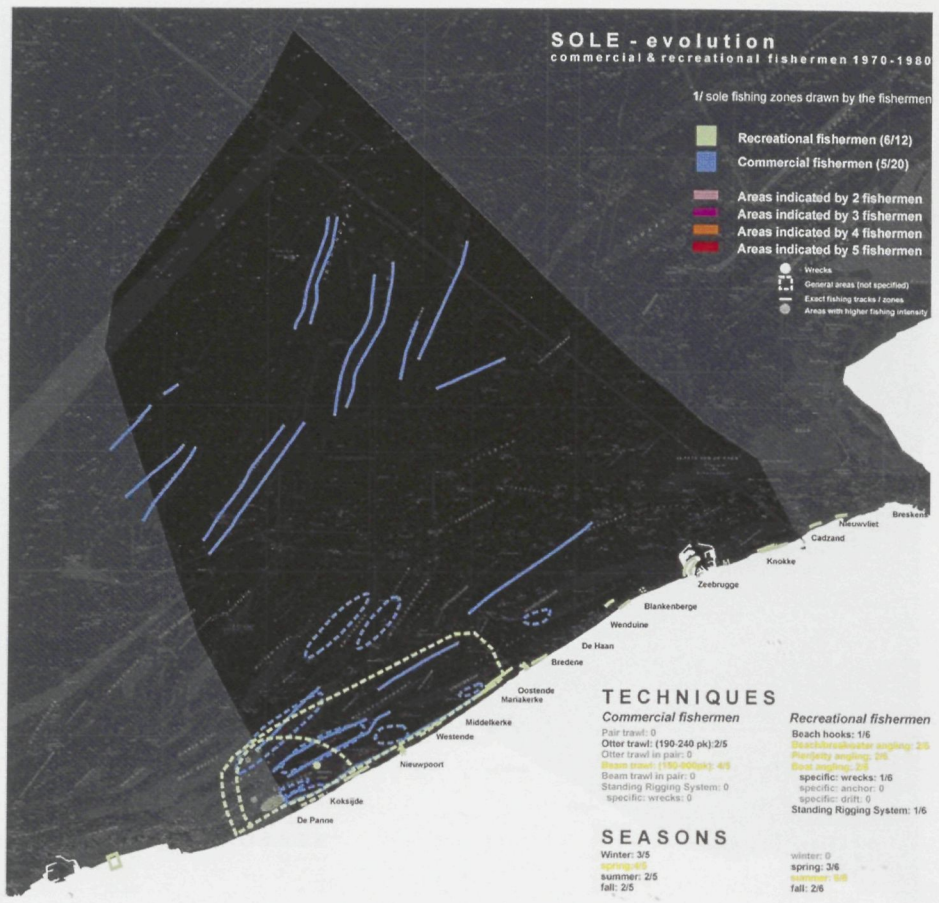


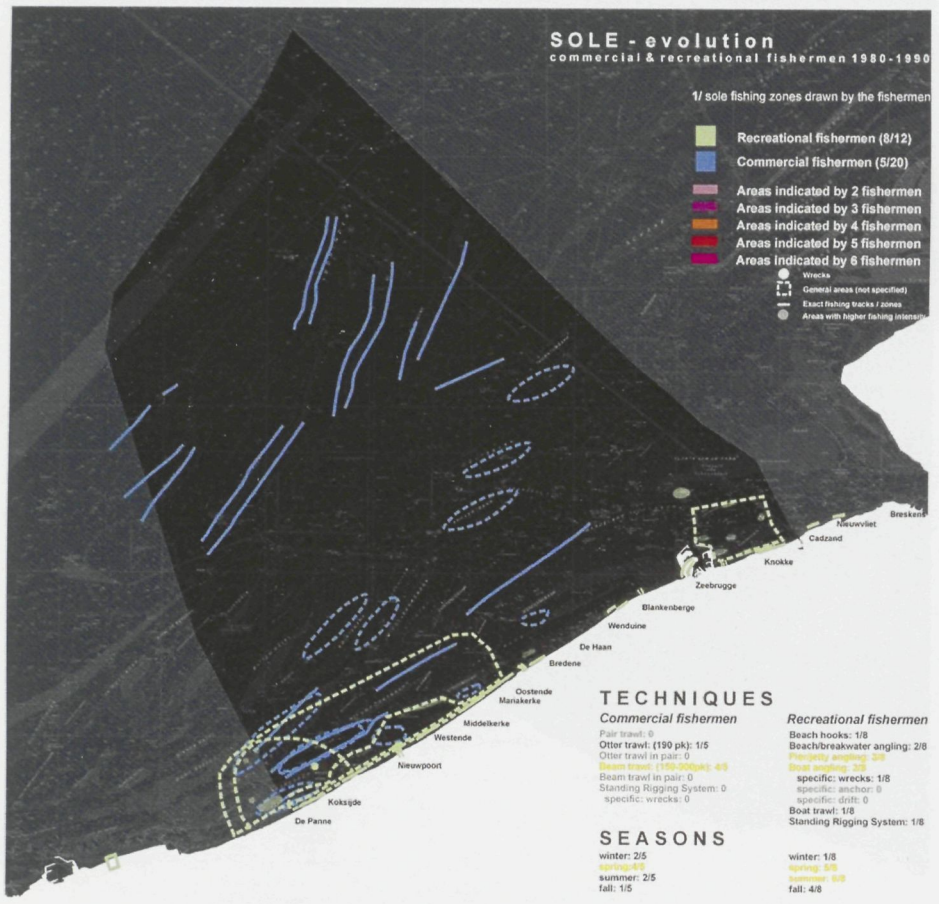


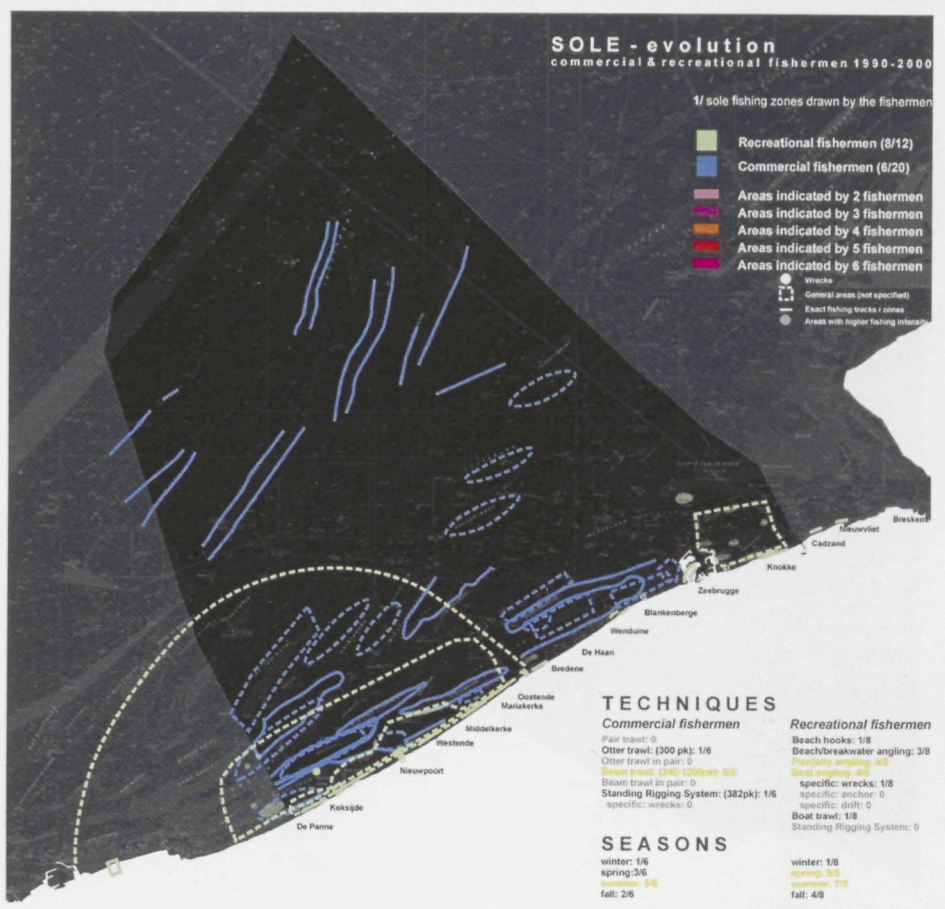
SOLE - evolution

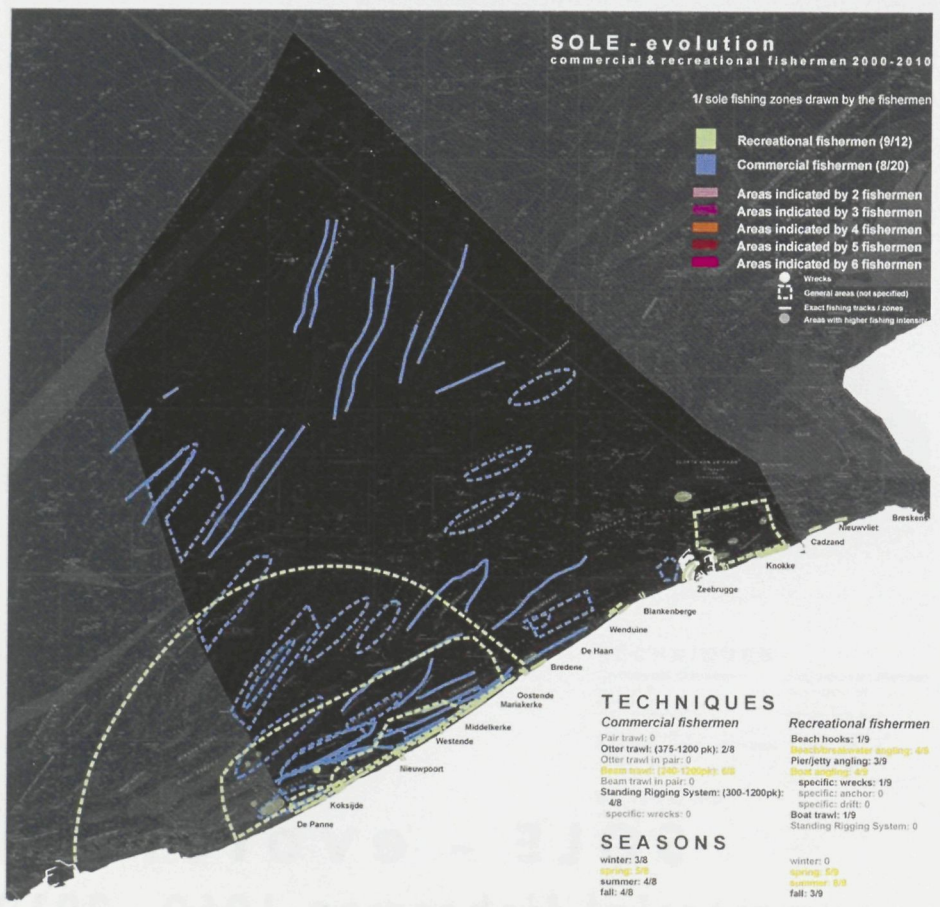
commercial fishermen 1960 - 2010





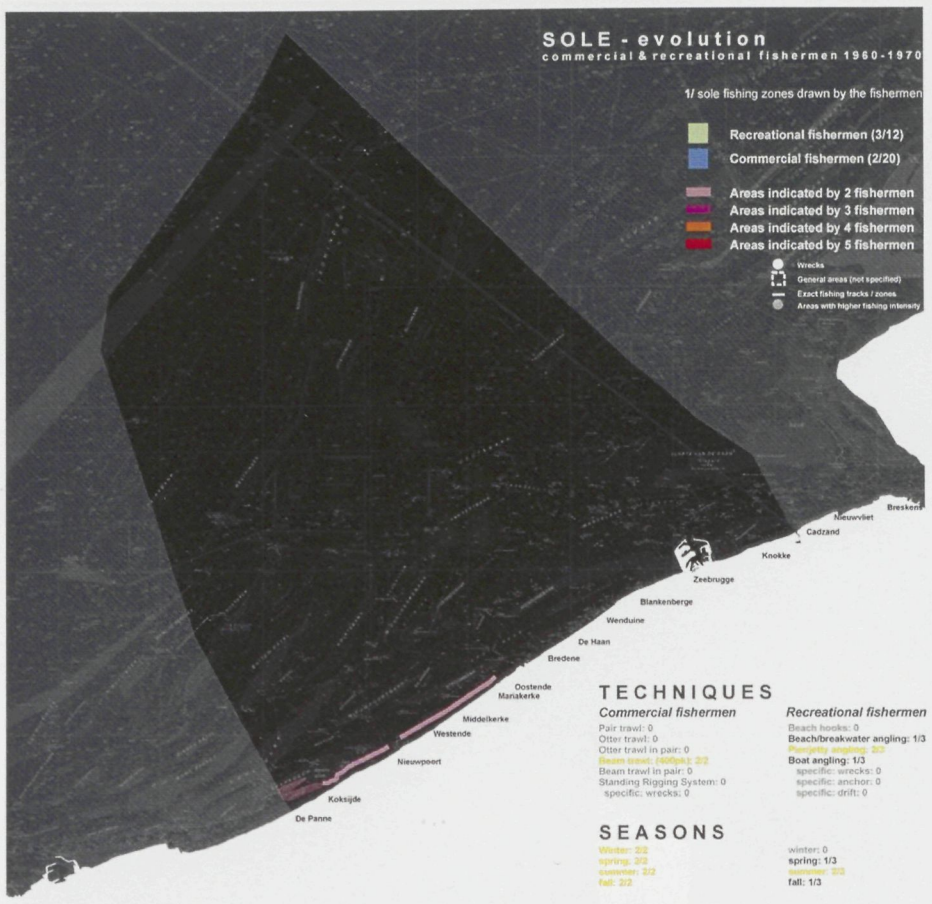


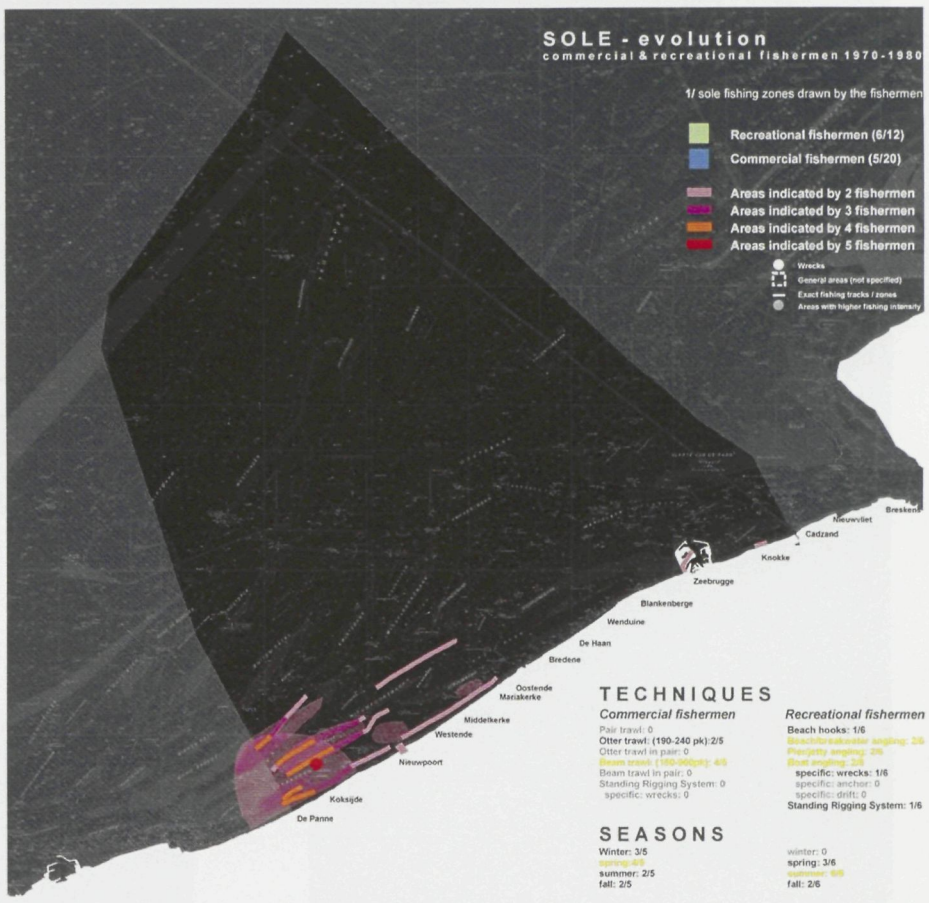


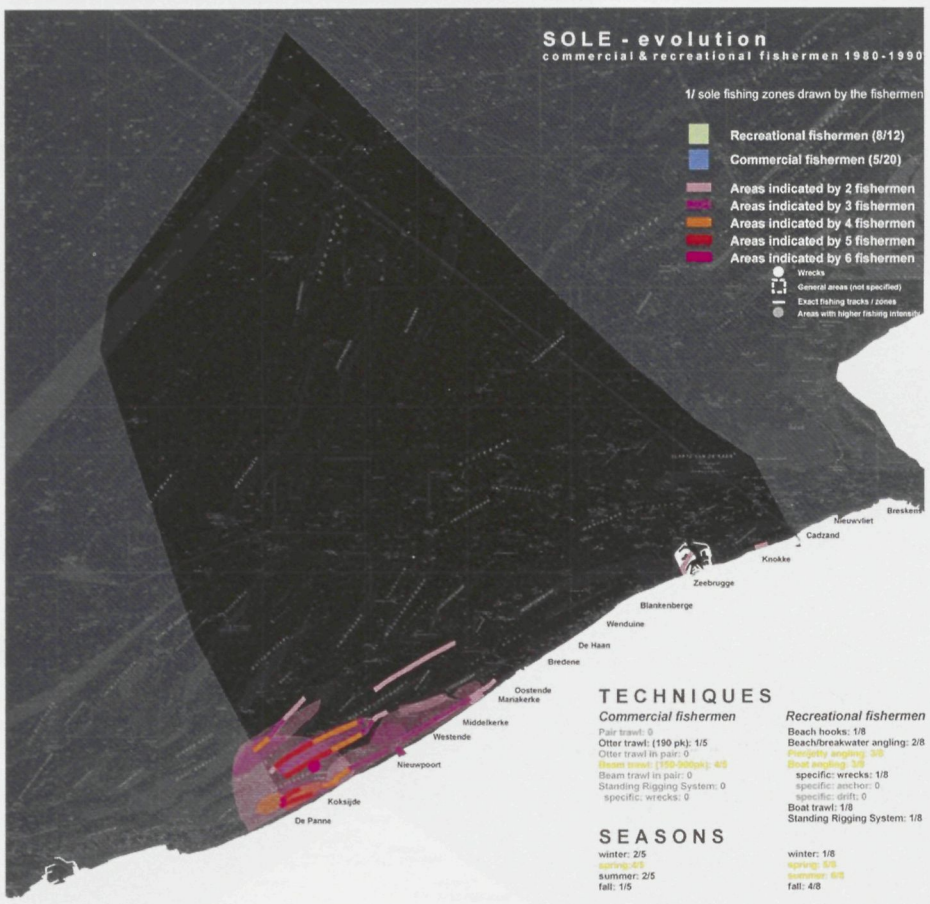


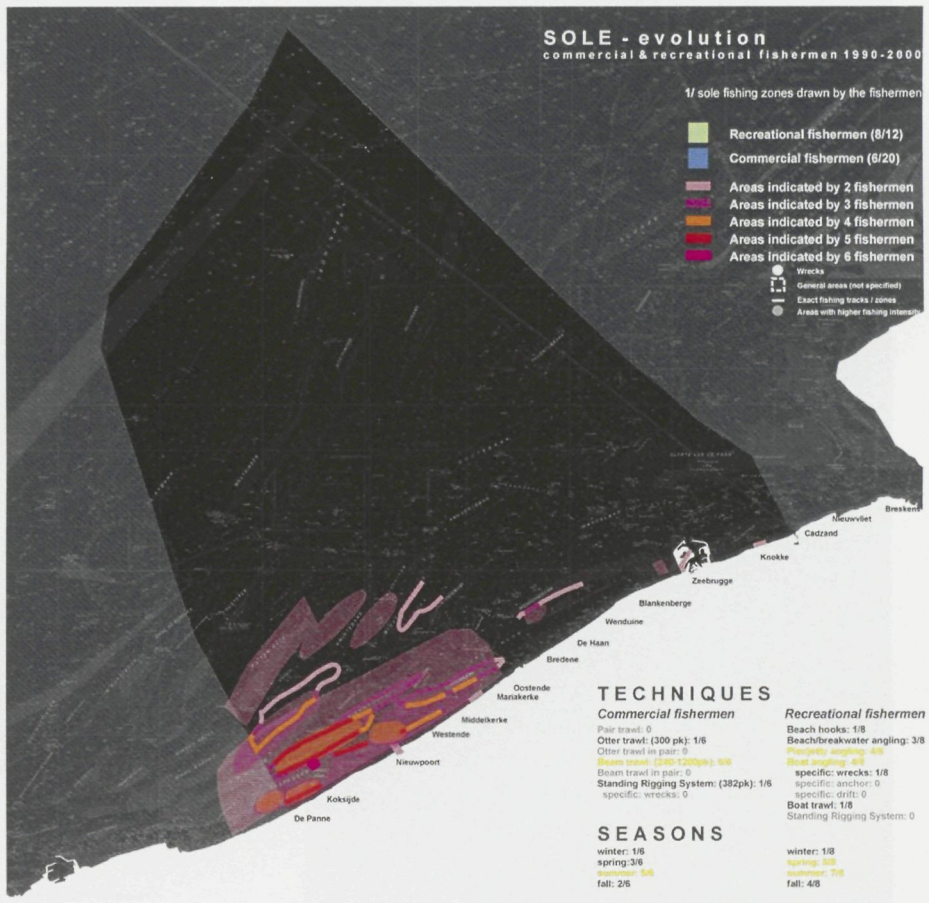
SOLE - evolution

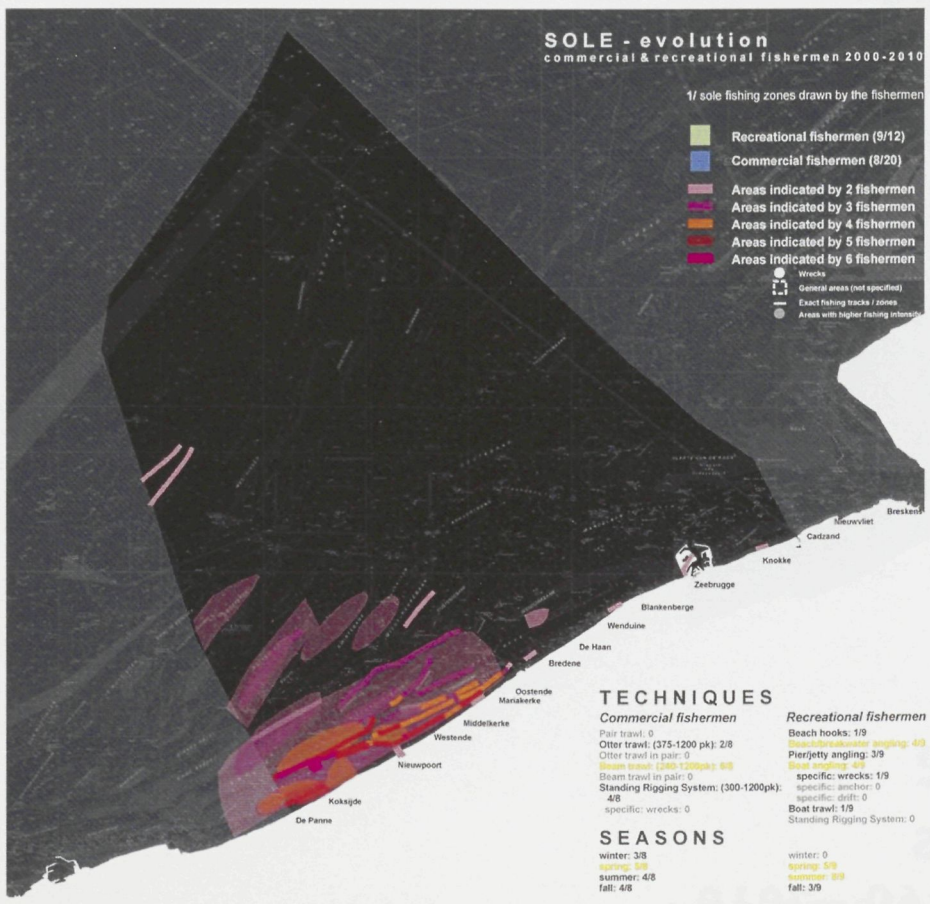
commercial & recreational fishermen 1960 - 2010







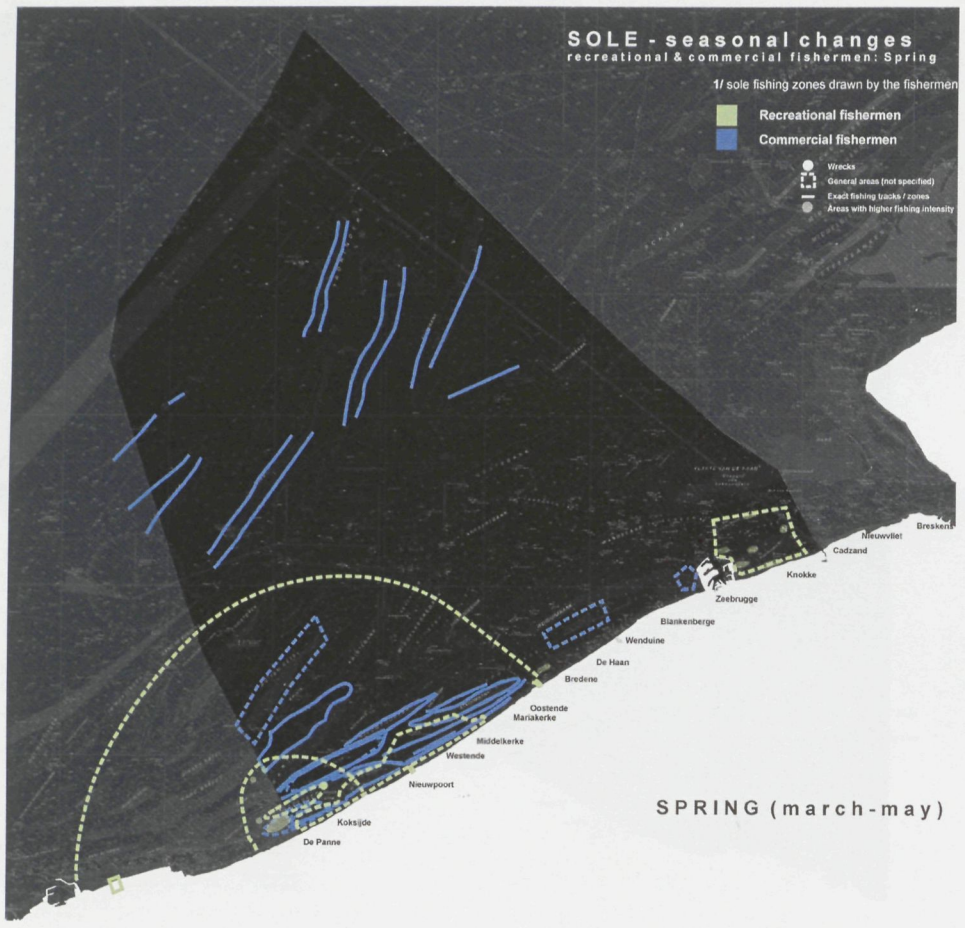


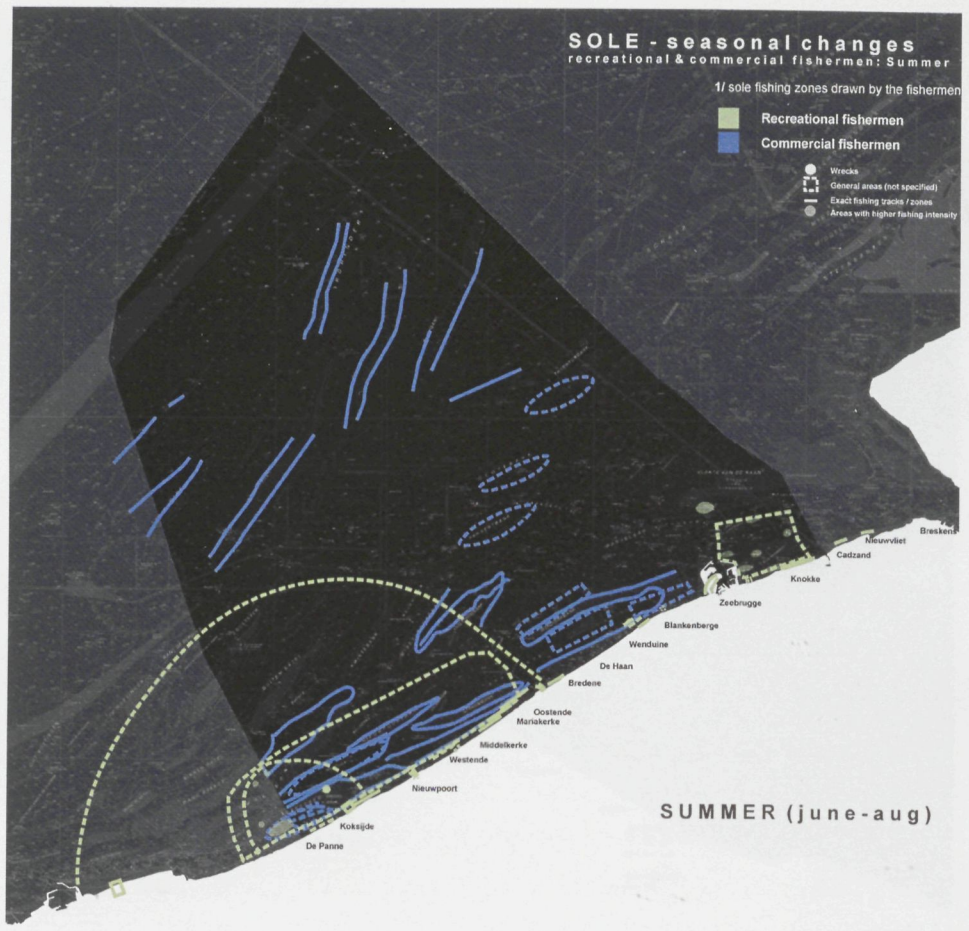


SOLE - evolution

commercial & recreational fishermen 1960 - 2010

areas fished by 2 or more fishermen









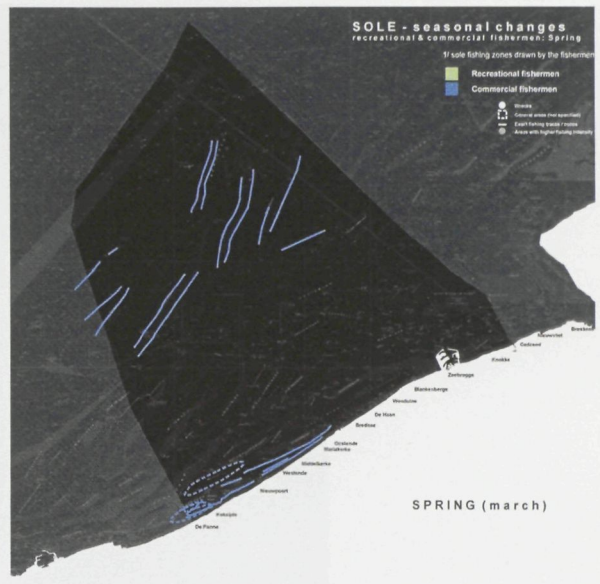
SOLE - seasonal changes
commercial & recreational fishermen 1960 - 2010



WINTER (jan)



WINTER (feb)



SPRING (march)



SPRING (april)



SPRING (may)



SUMMER (june)



SUMMER (july)



SUMMER (august)



AUTUMN (sept)



AUTUMN (oct)



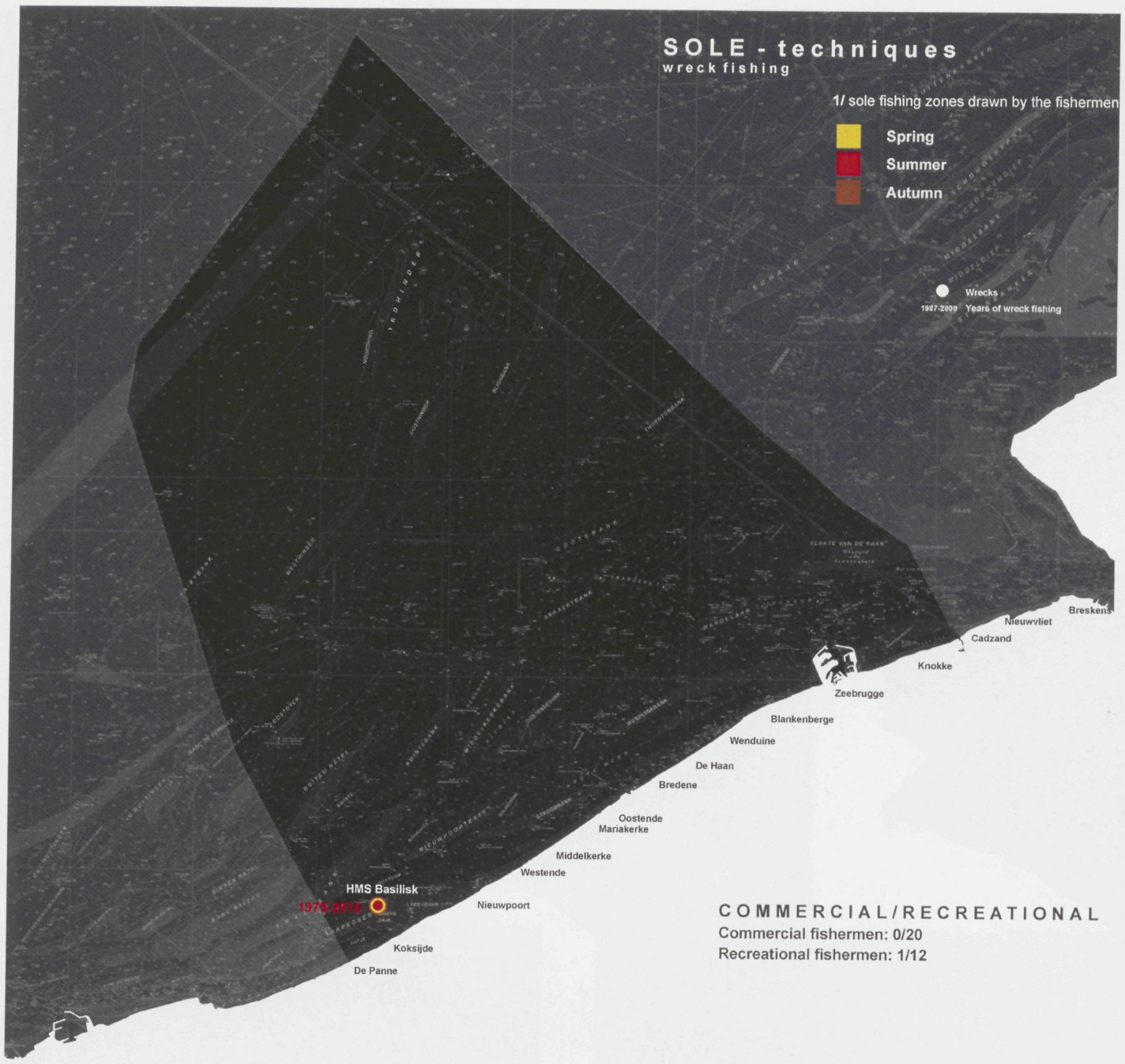
AUTUMN (nov)



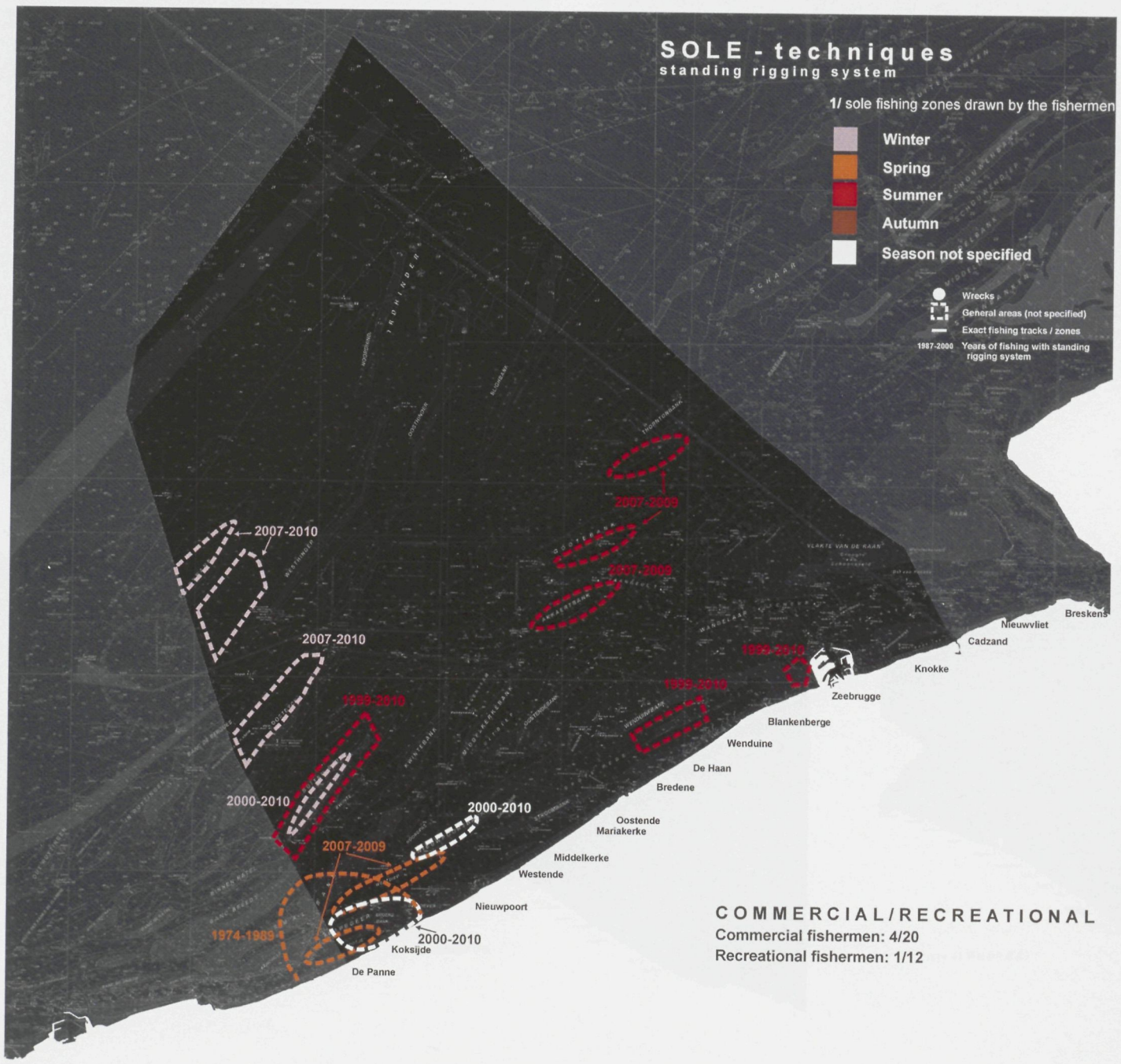
WINTER (dec)

SOLE - seasonal changes january-december

commercial & recreational fishermen 1960 - 2010



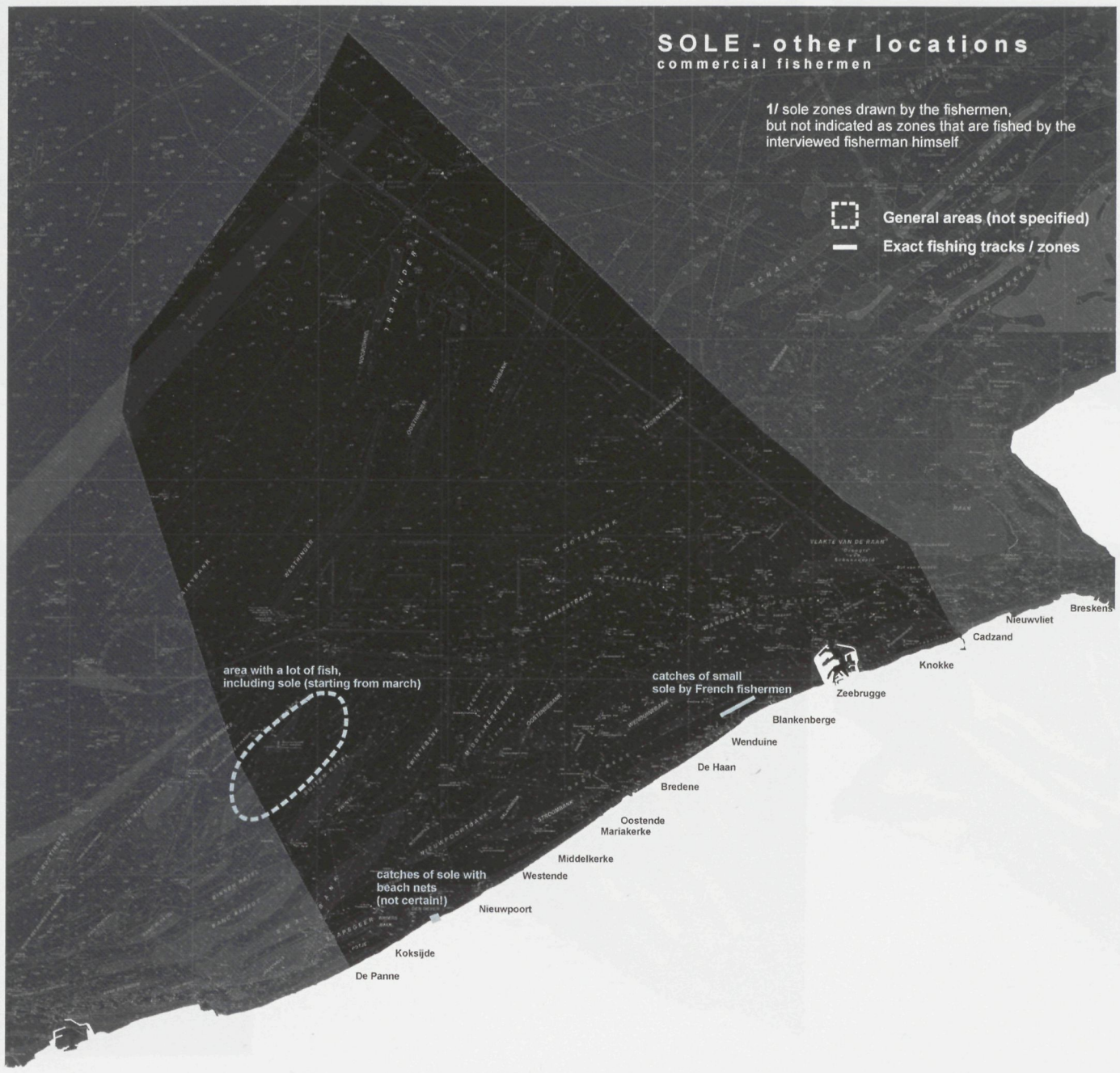
COMMERCIAL/RECREATIONAL
Commercial fishermen: 0/20
Recreational fishermen: 1/12

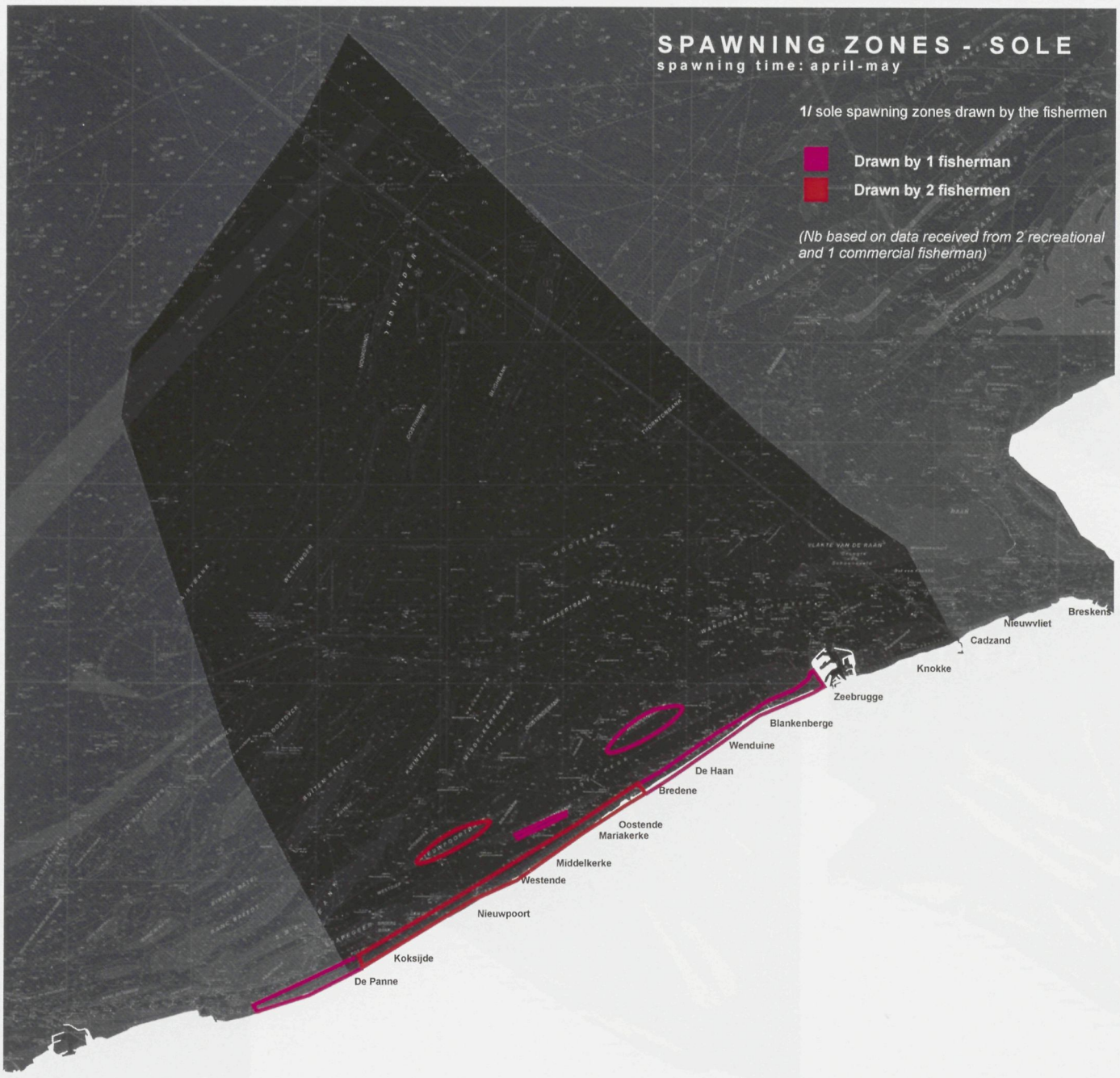


COMMERCIAL/RECREATIONAL
Commercial fishermen: 4/20
Recreational fishermen: 1/12

SOLE - techniques

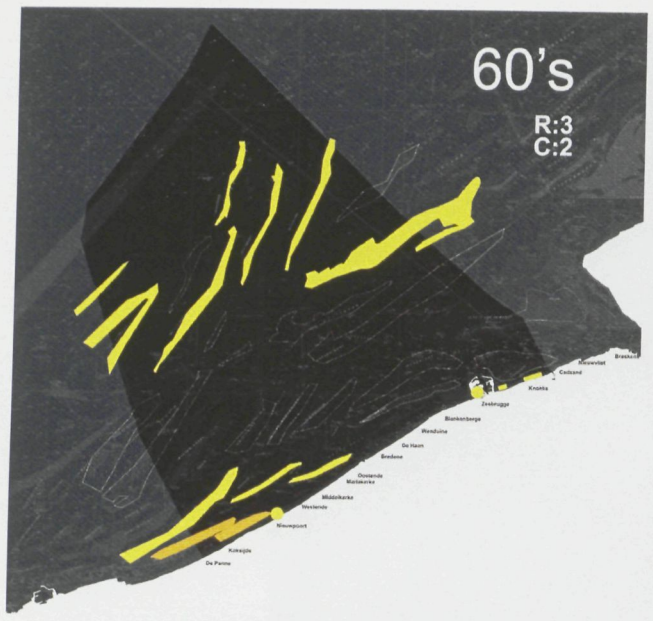
commercial & recreational fishermen 1960 - 2010

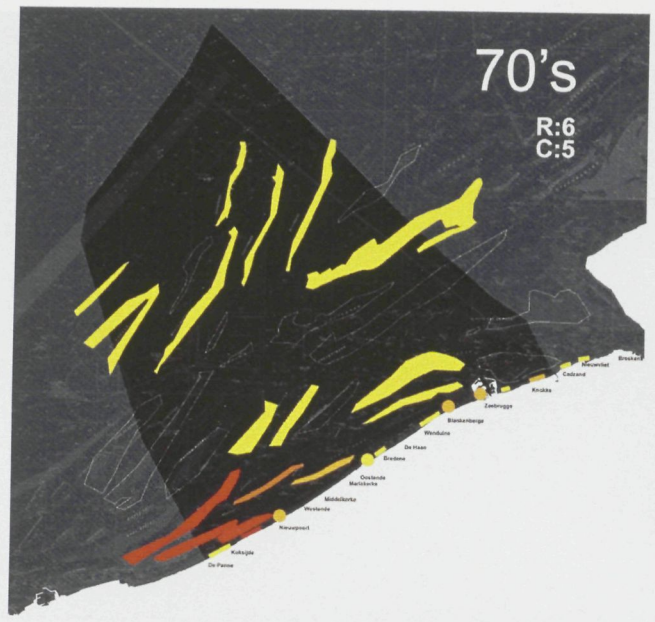




SOLE - other locations & spawning zones

commercial & recreational fishermen 1950 - 2010











SOLE - EVOLUTION OF FISHING ZONES
commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011





SOLE - SEASONAL CHANGES
commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011





SOLE - structure maps
commercial & recreational fishermen 1950 - 2010

MAPS SERIES III

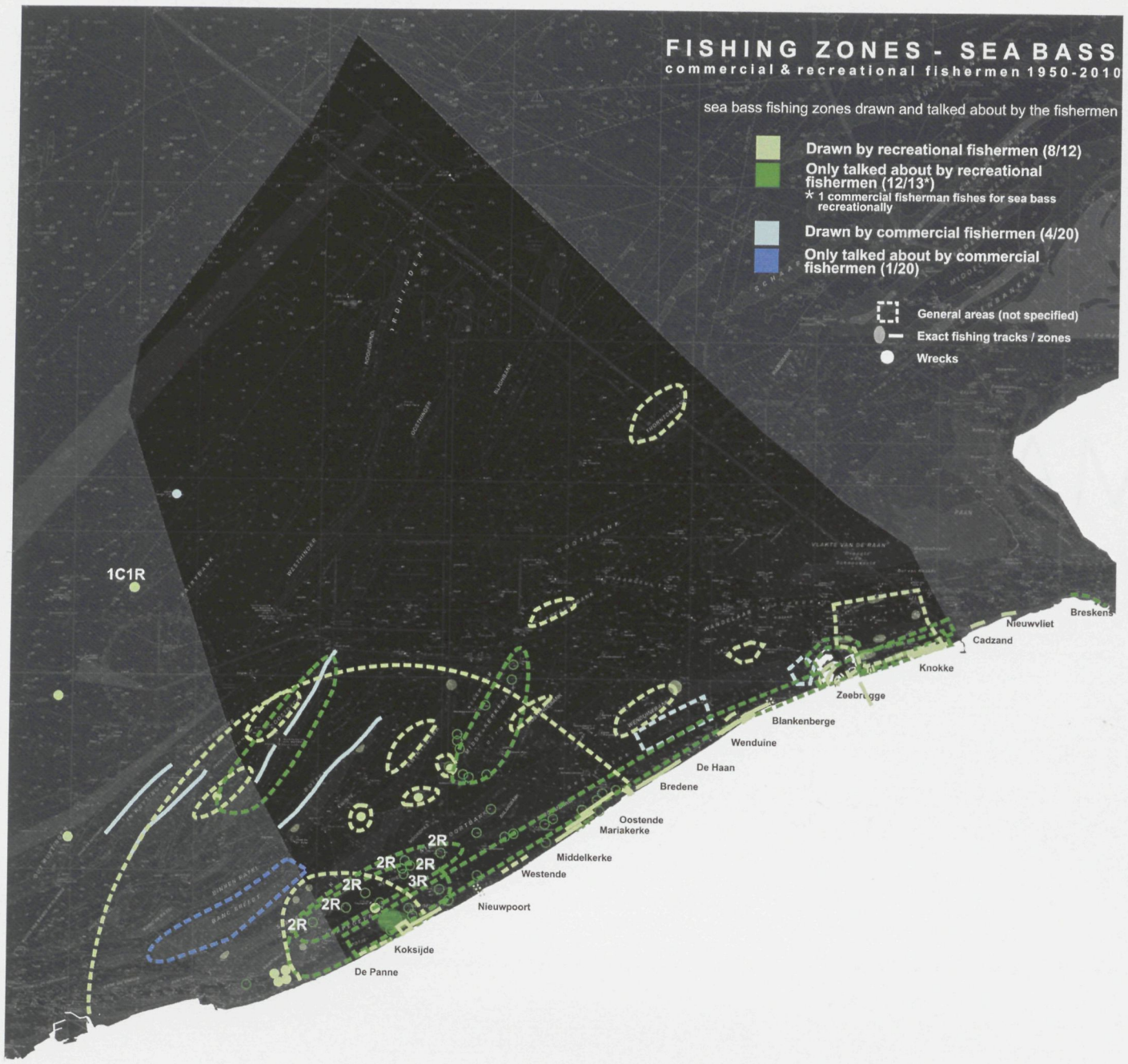
SEABASS

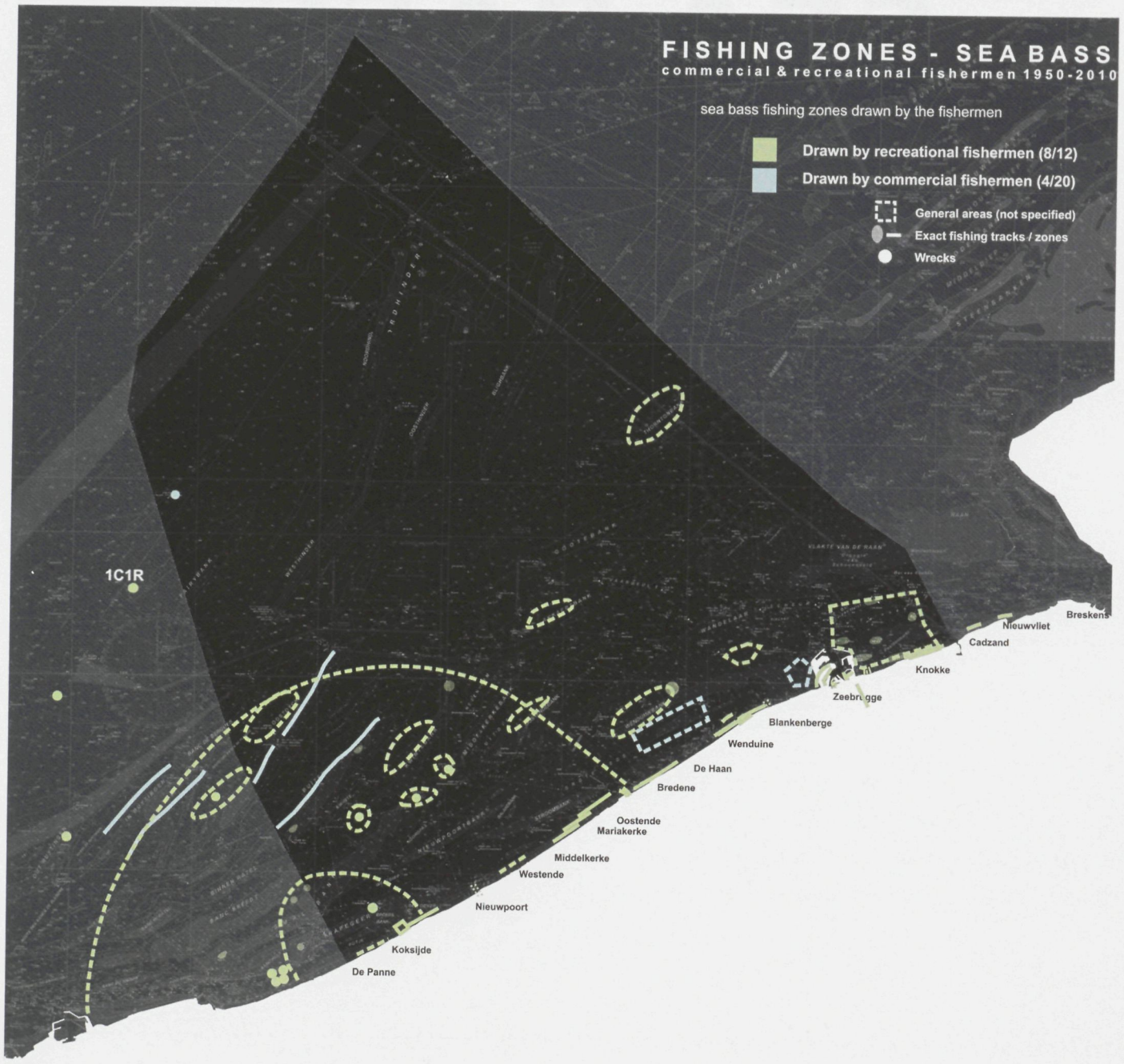


MAPS SERIES III

SEA BASS

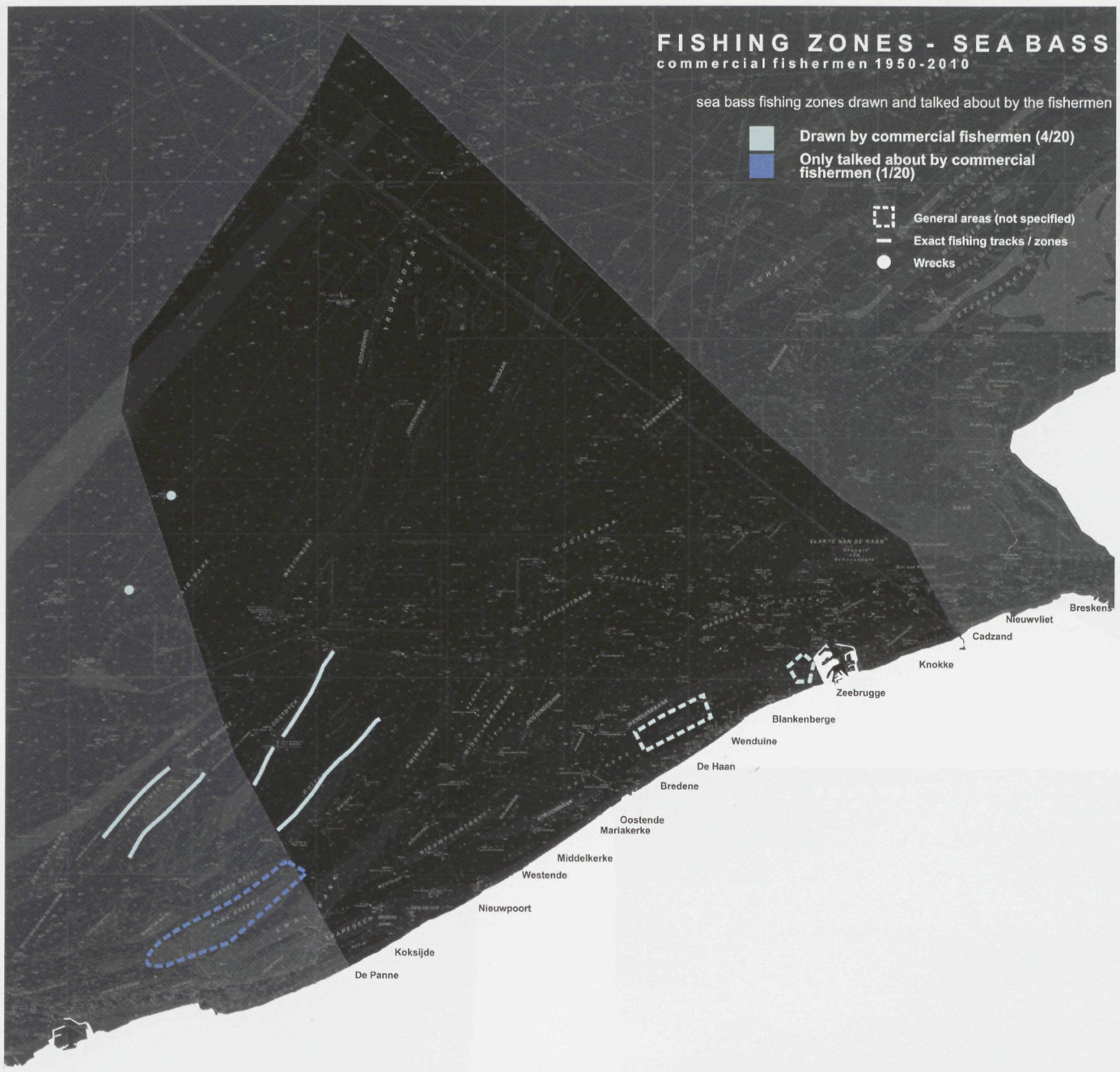


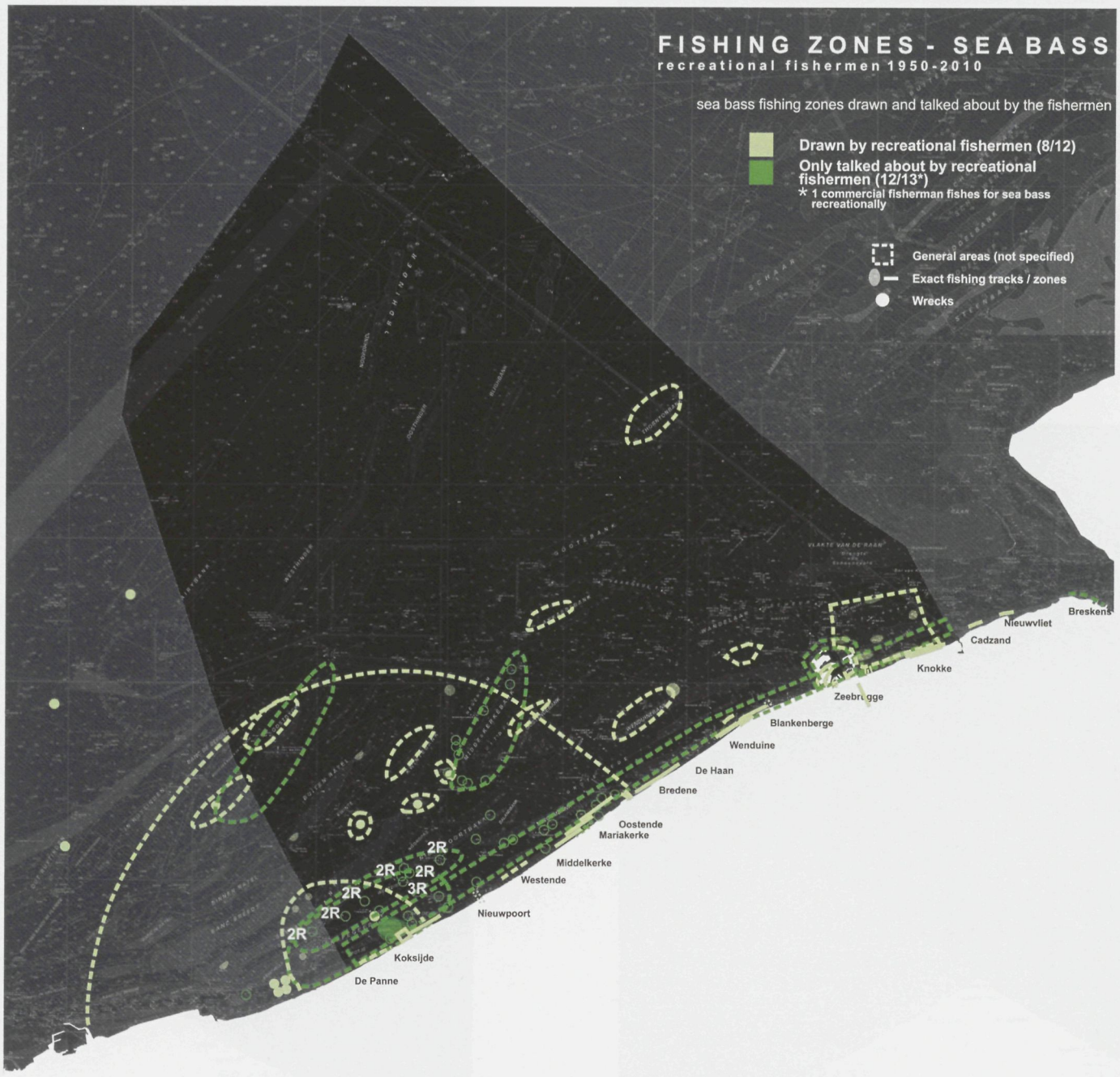




SEA BASS - fishing zones drawn and talked about

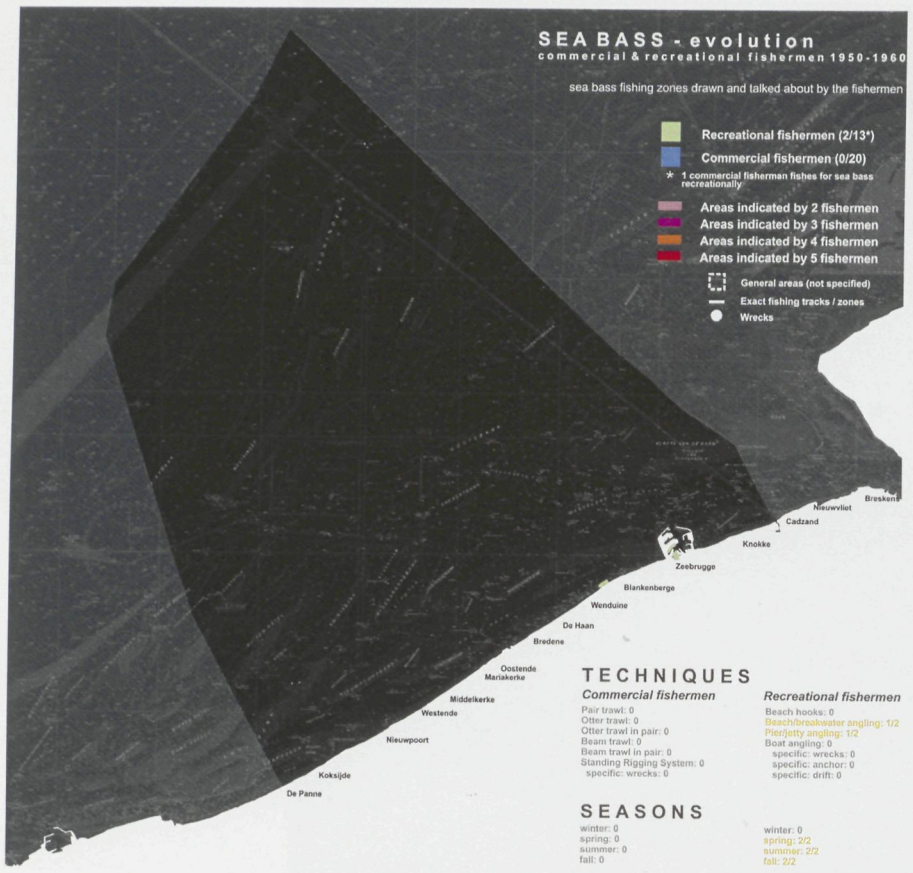
commercial & recreational fishermen 1950 - 2010

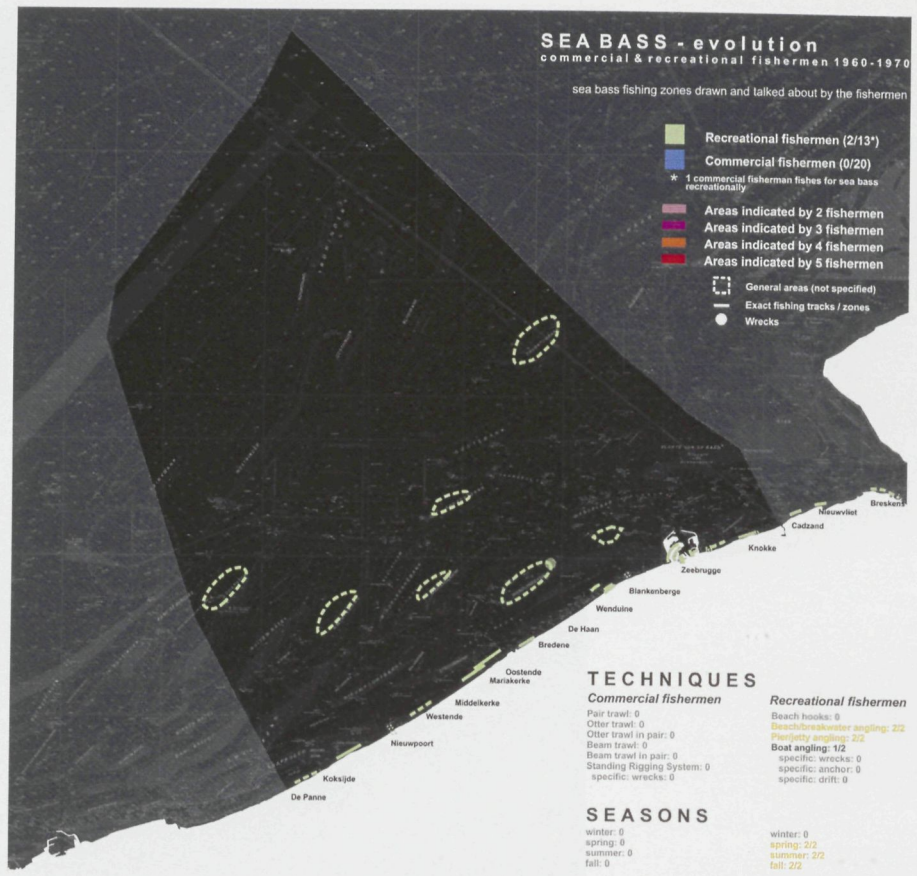


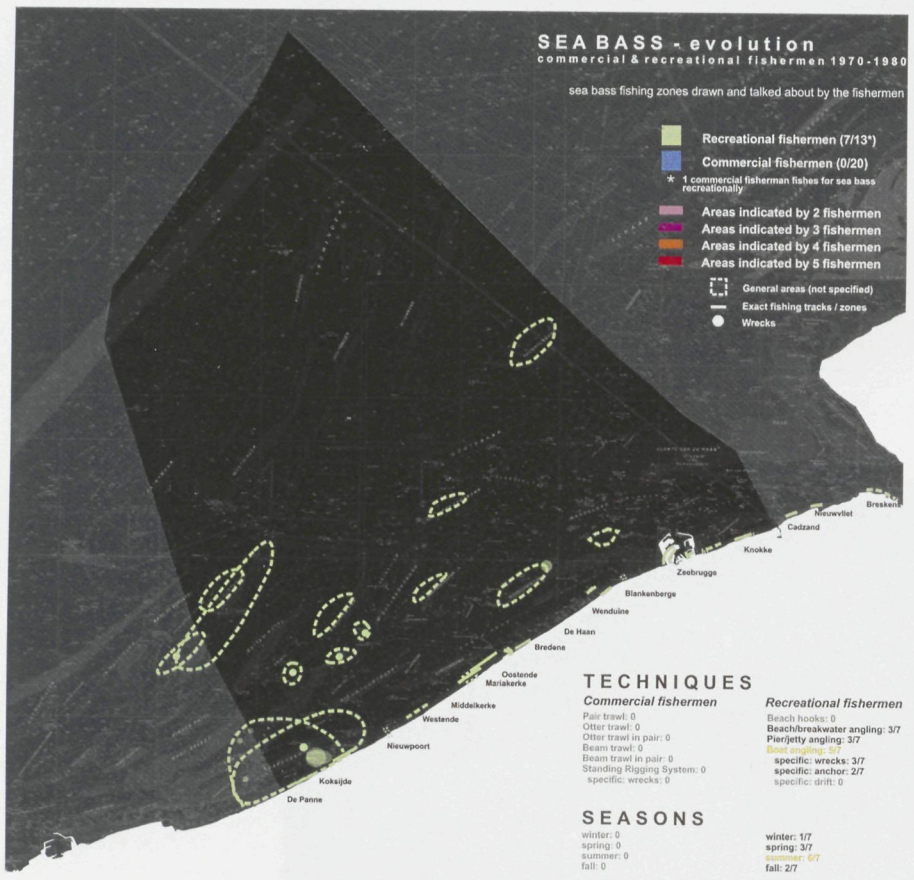


SEA BASS - fishing zones

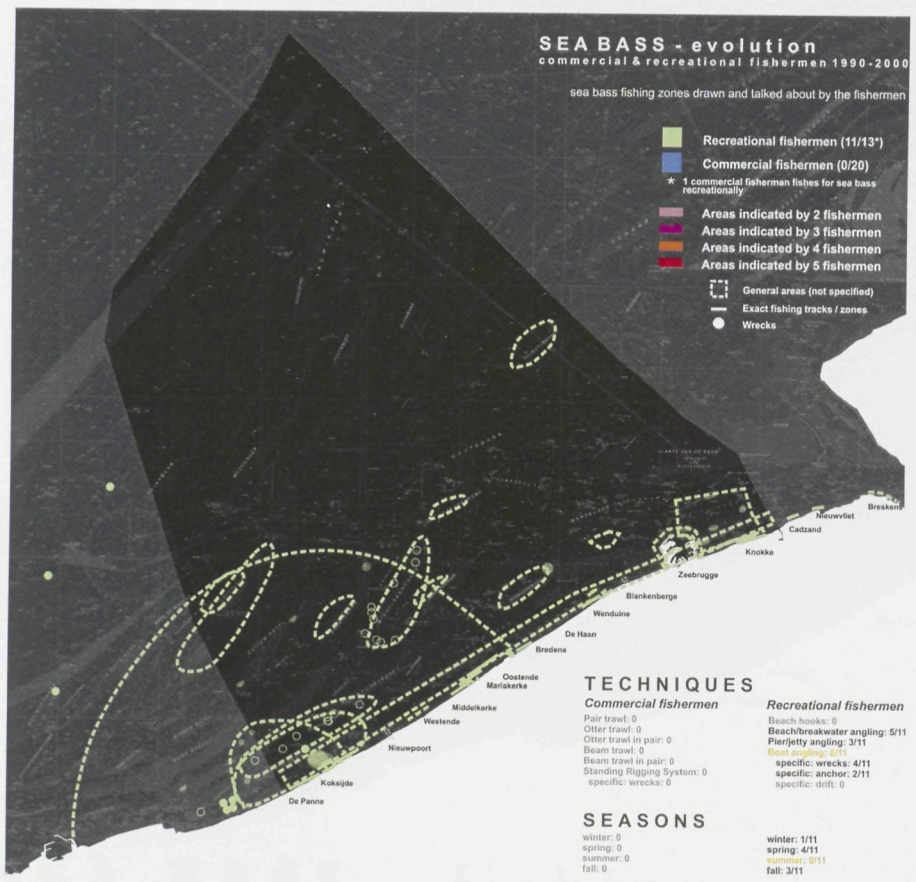
commercial & recreational fishermen 1950 - 2010

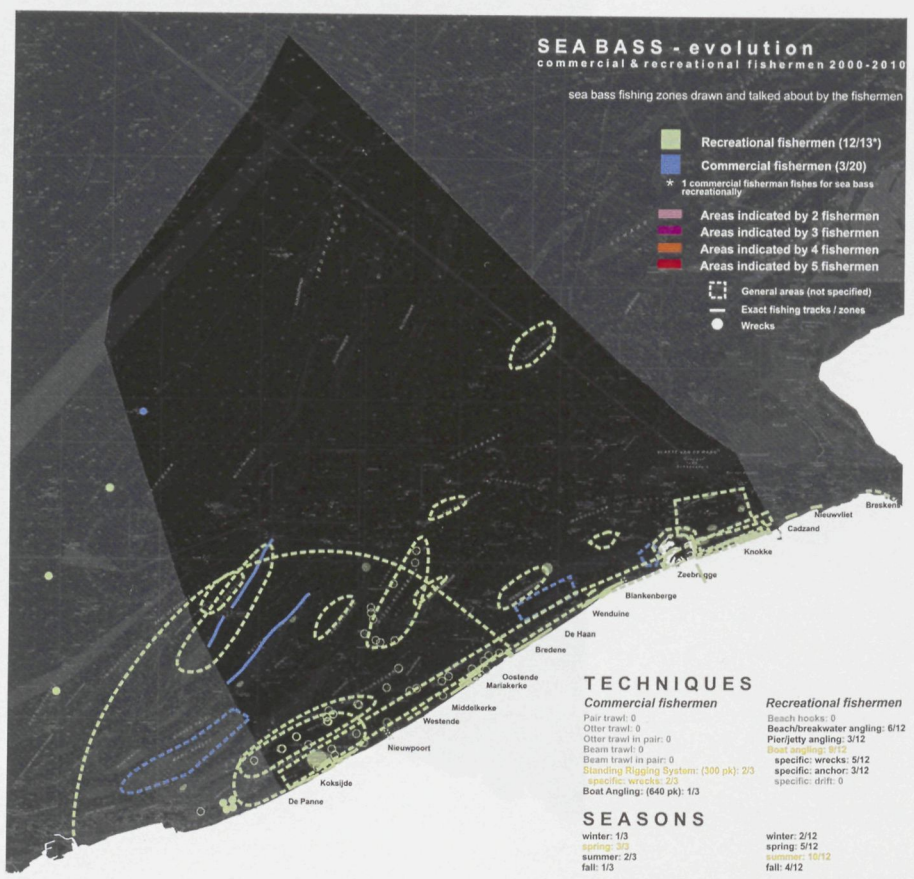






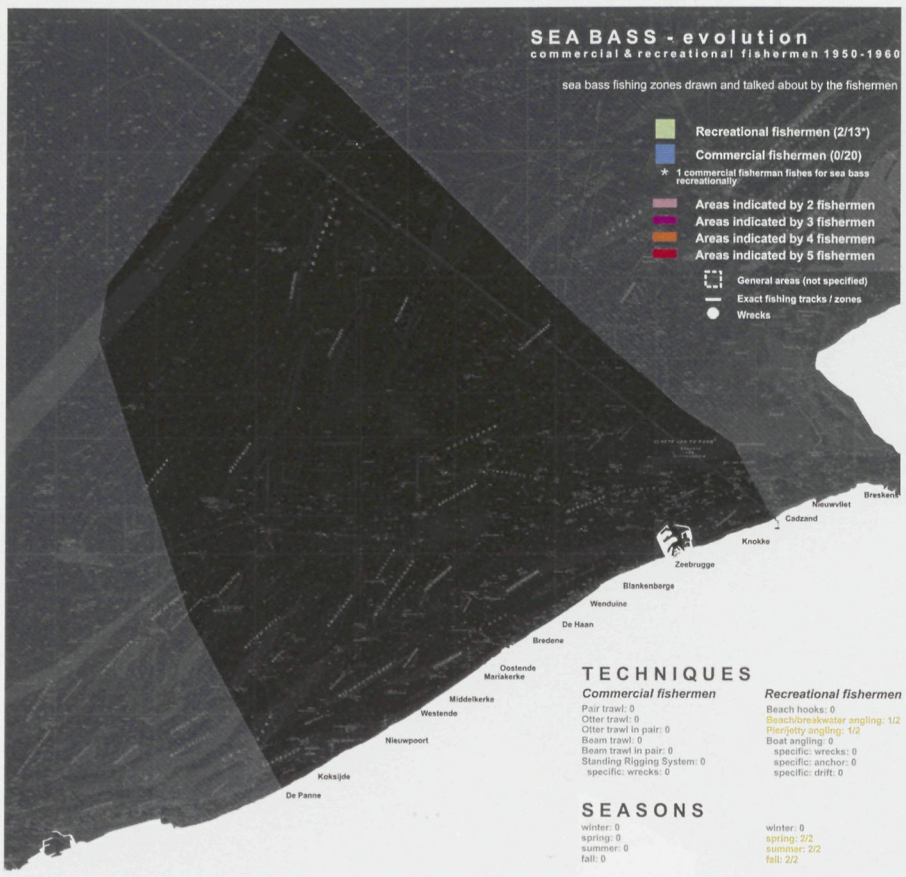


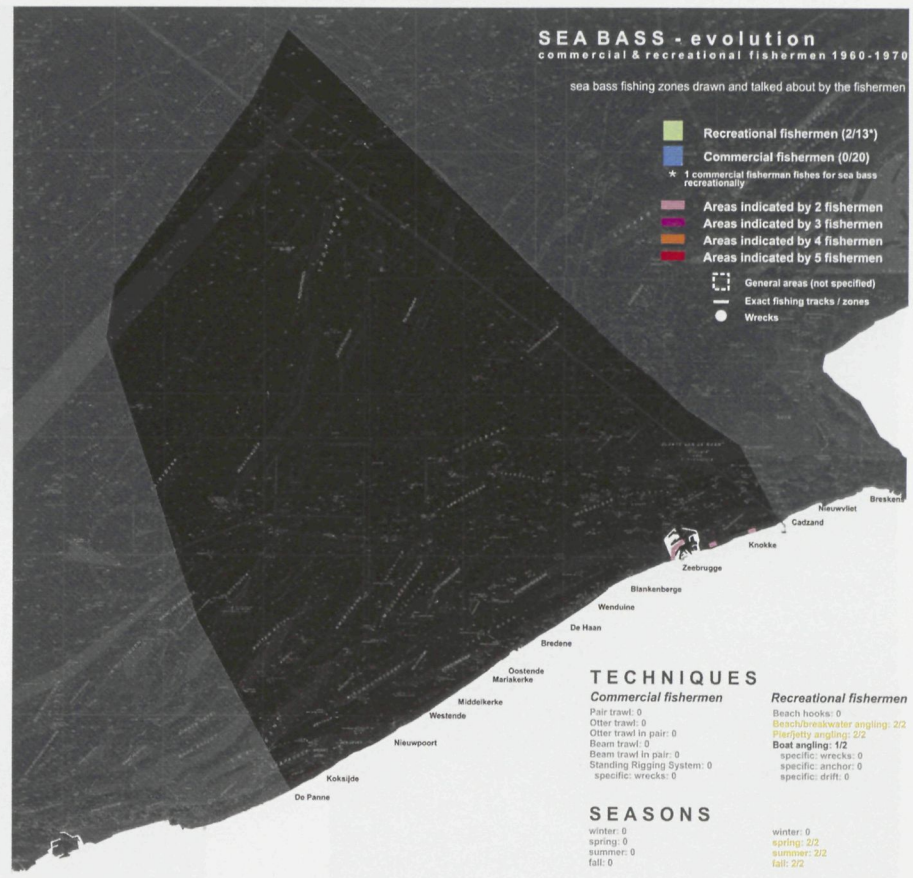


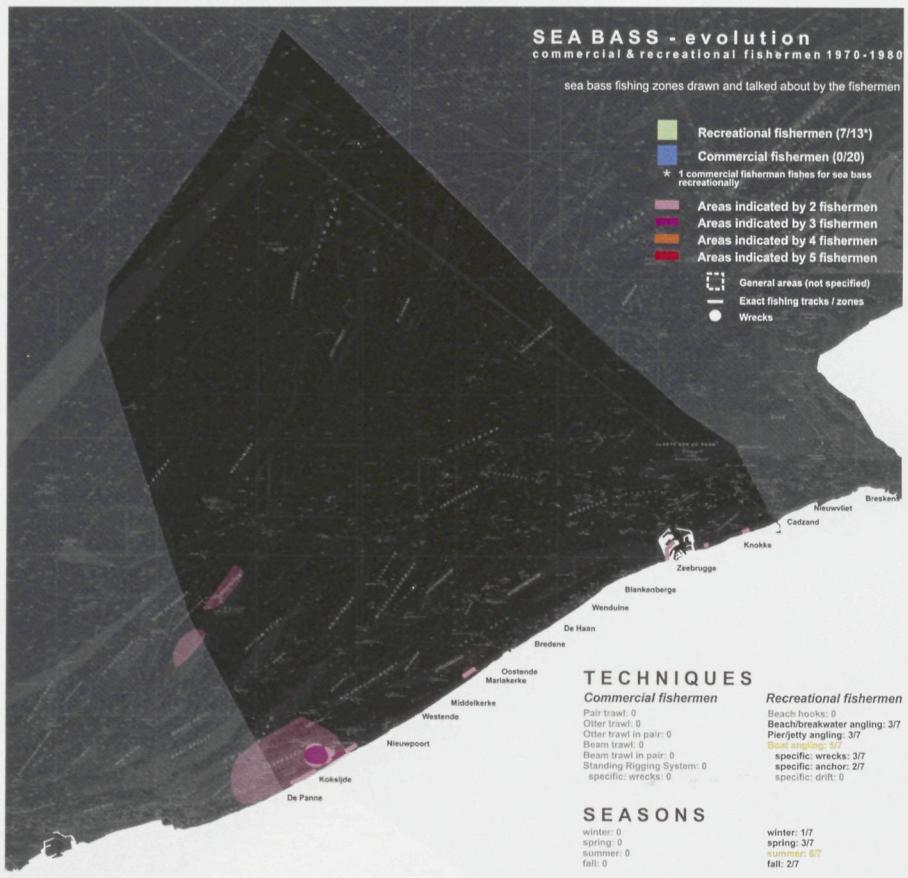


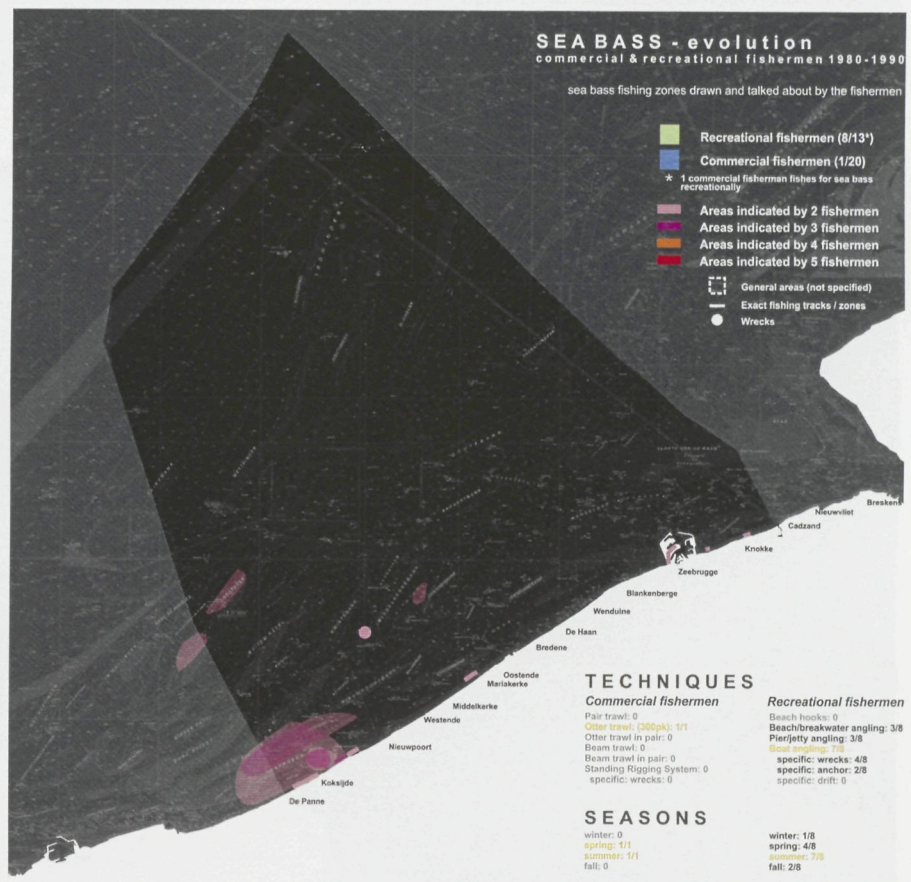
SEA BASS - evolution

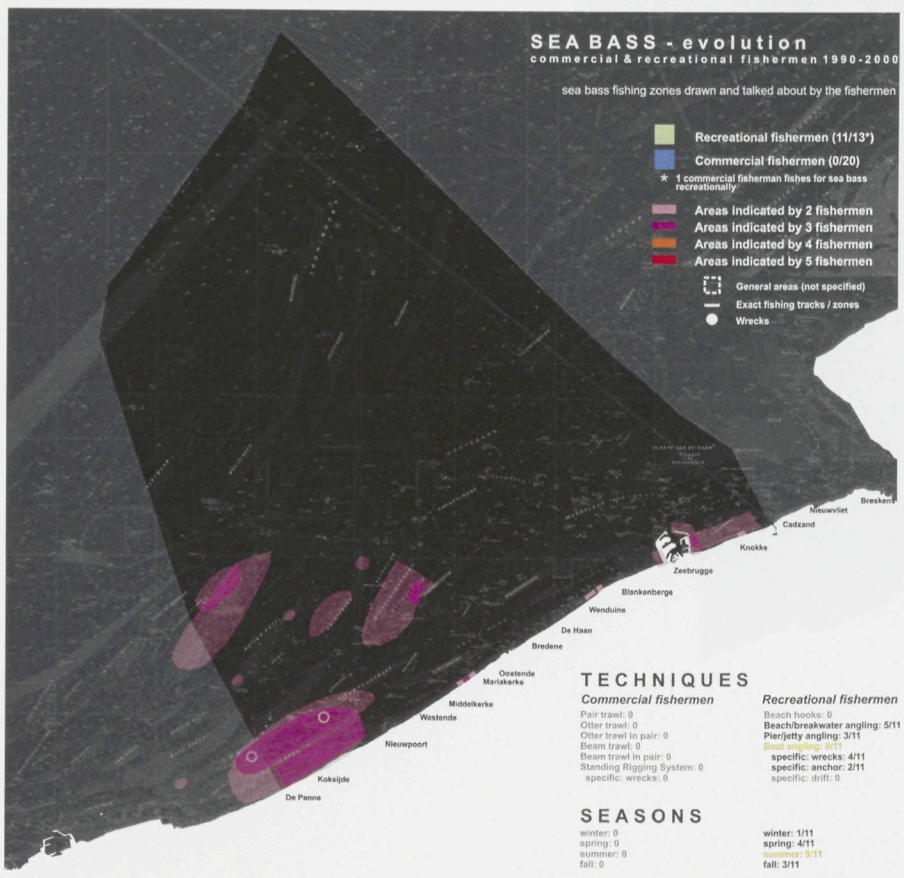
recreational & commercial fishermen 1950 - 2010

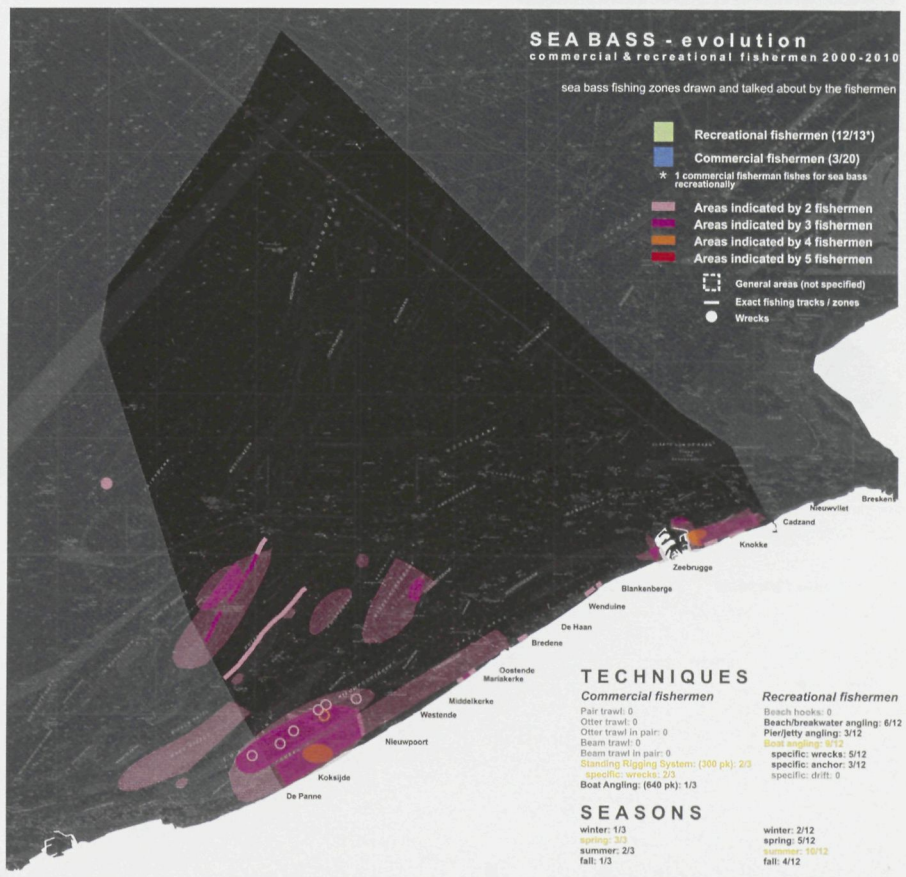








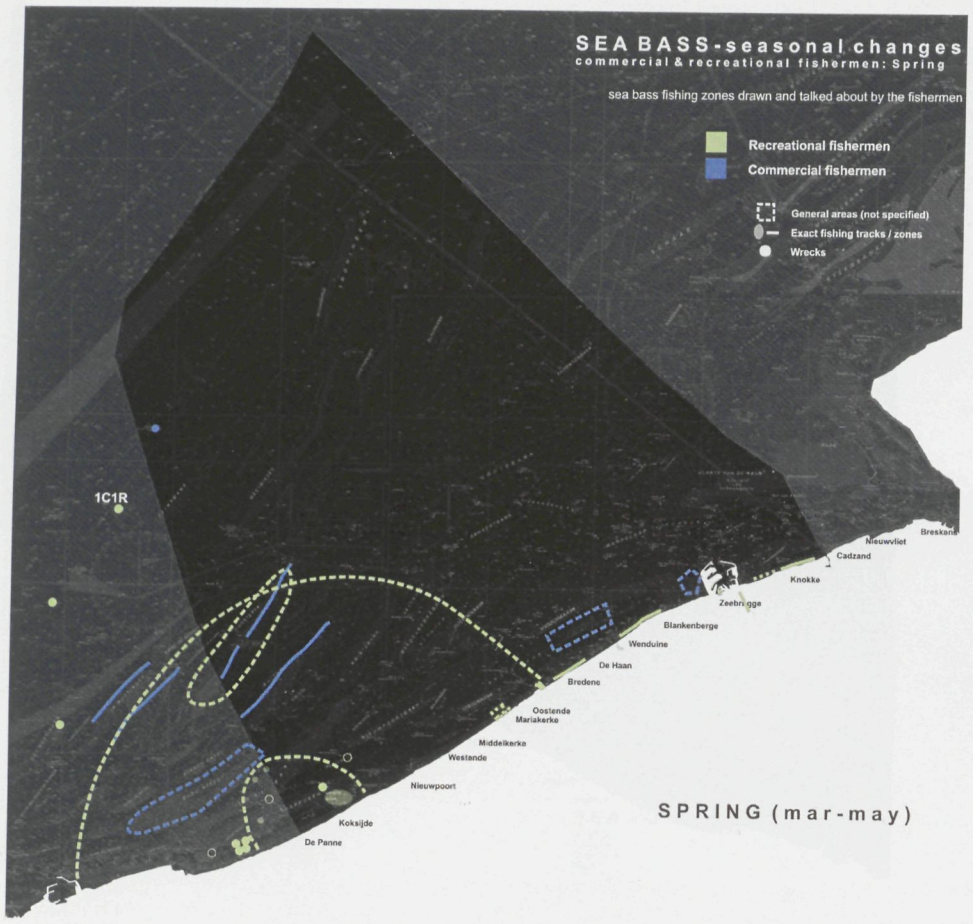


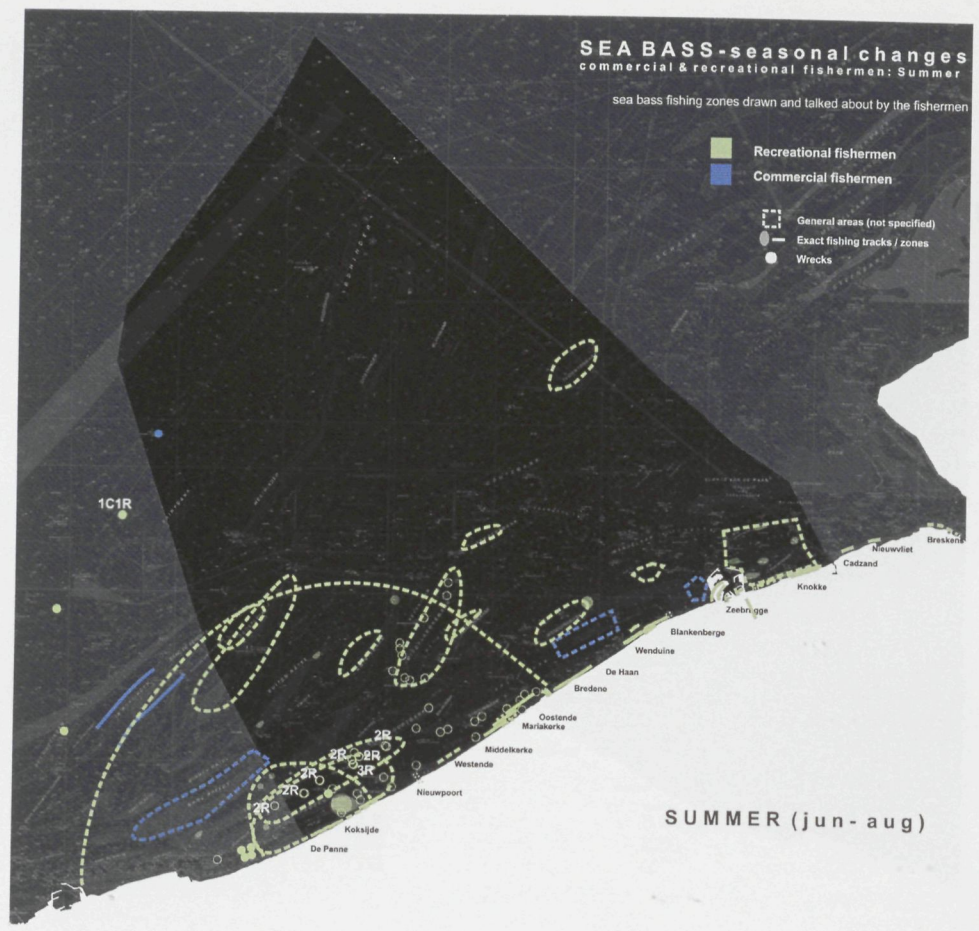


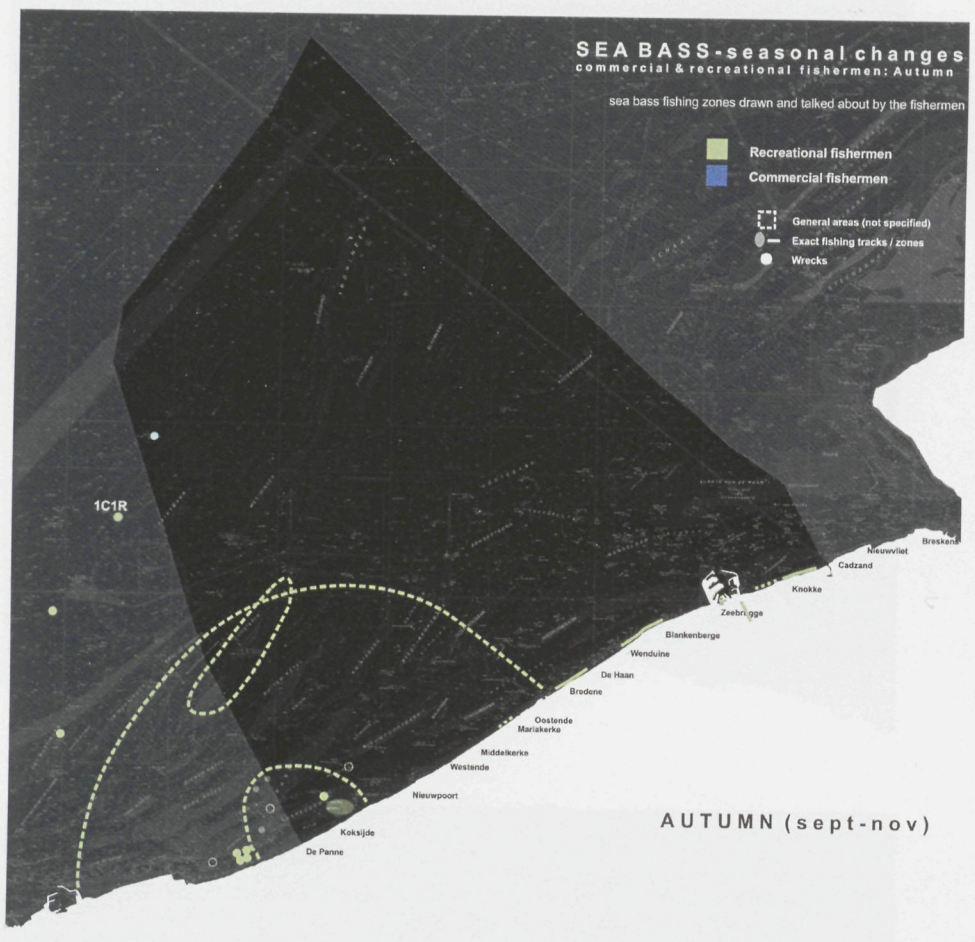
SEA BASS - evolution

commercial & recreational fishermen 1950 - 2010

areas fished by 2 or more fishermen

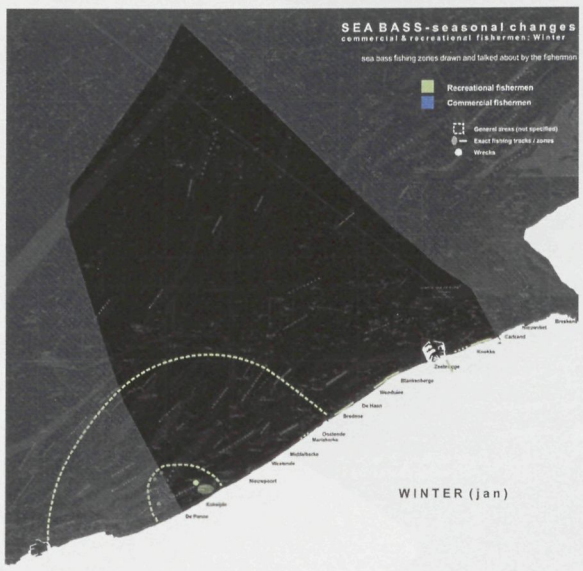




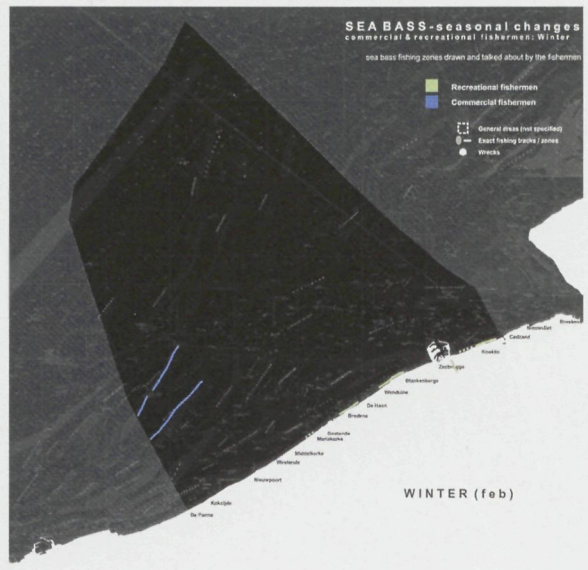




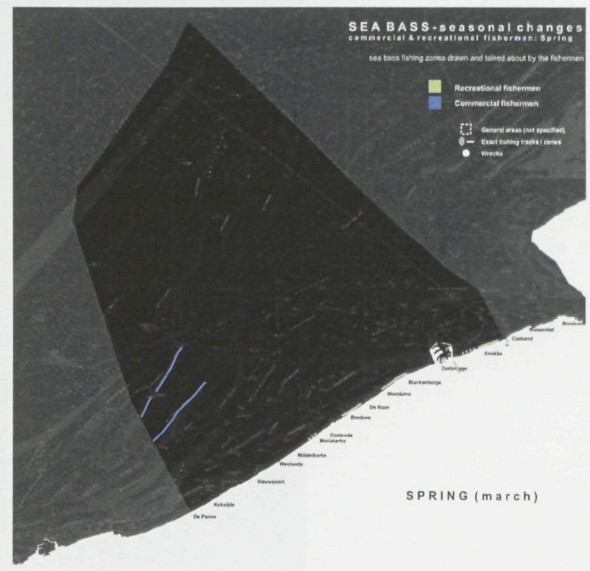
SEA BASS - seasonal changes
commercial & recreational fishermen 1950 - 2010



WINTER (jan)



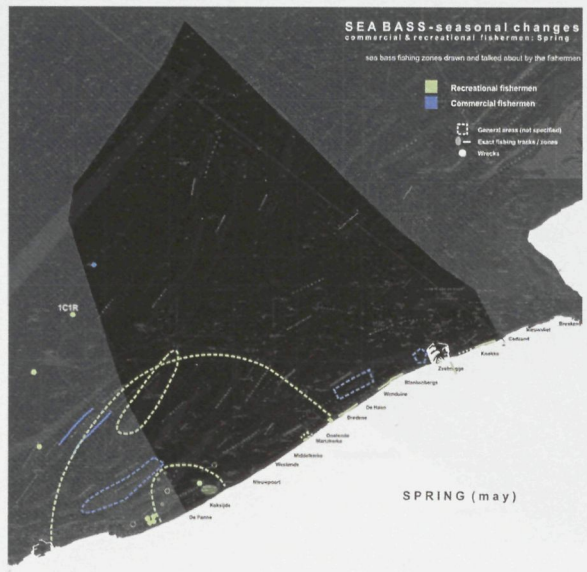
WINTER (feb)



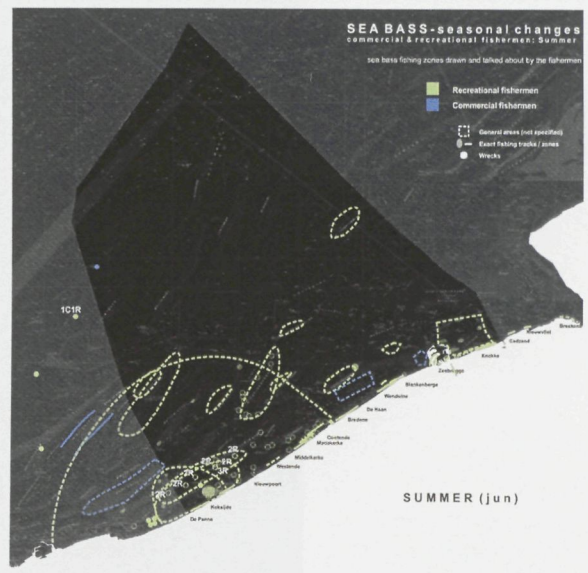
SPRING (march)



SPRING (april)



SPRING (may)



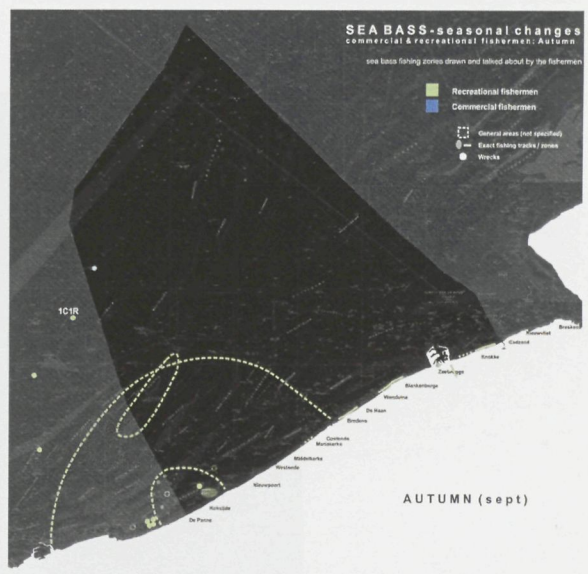
SUMMER (jun)



SUMMER (july)



SUMMER (aug)



AUTUMN (sept)



AUTUMN (oct)



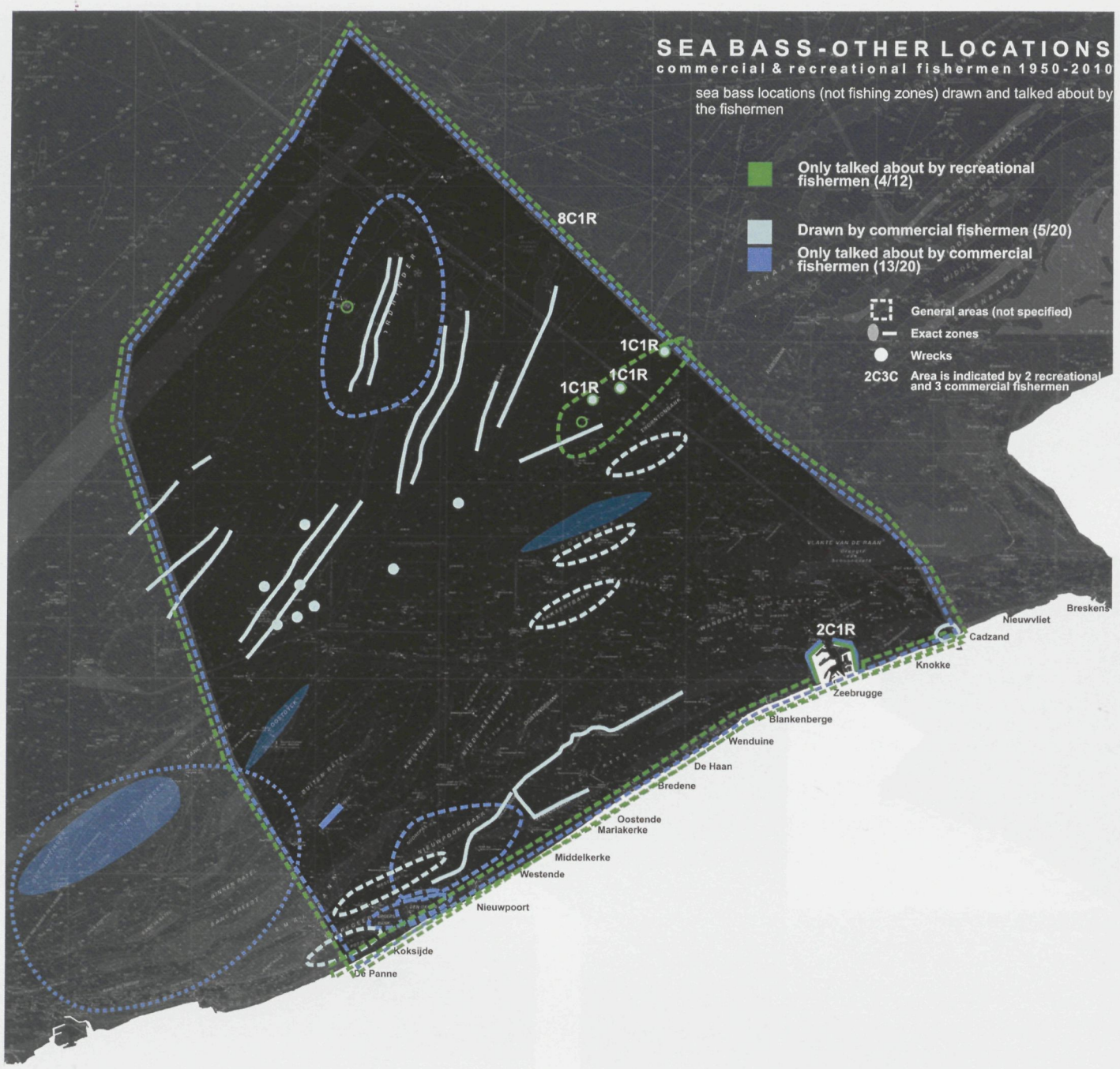
AUTUMN (nov)



WINTER (dec)

SEA BASS - seasonal changes january-december

commercial & recreational fishermen 1950 - 2010





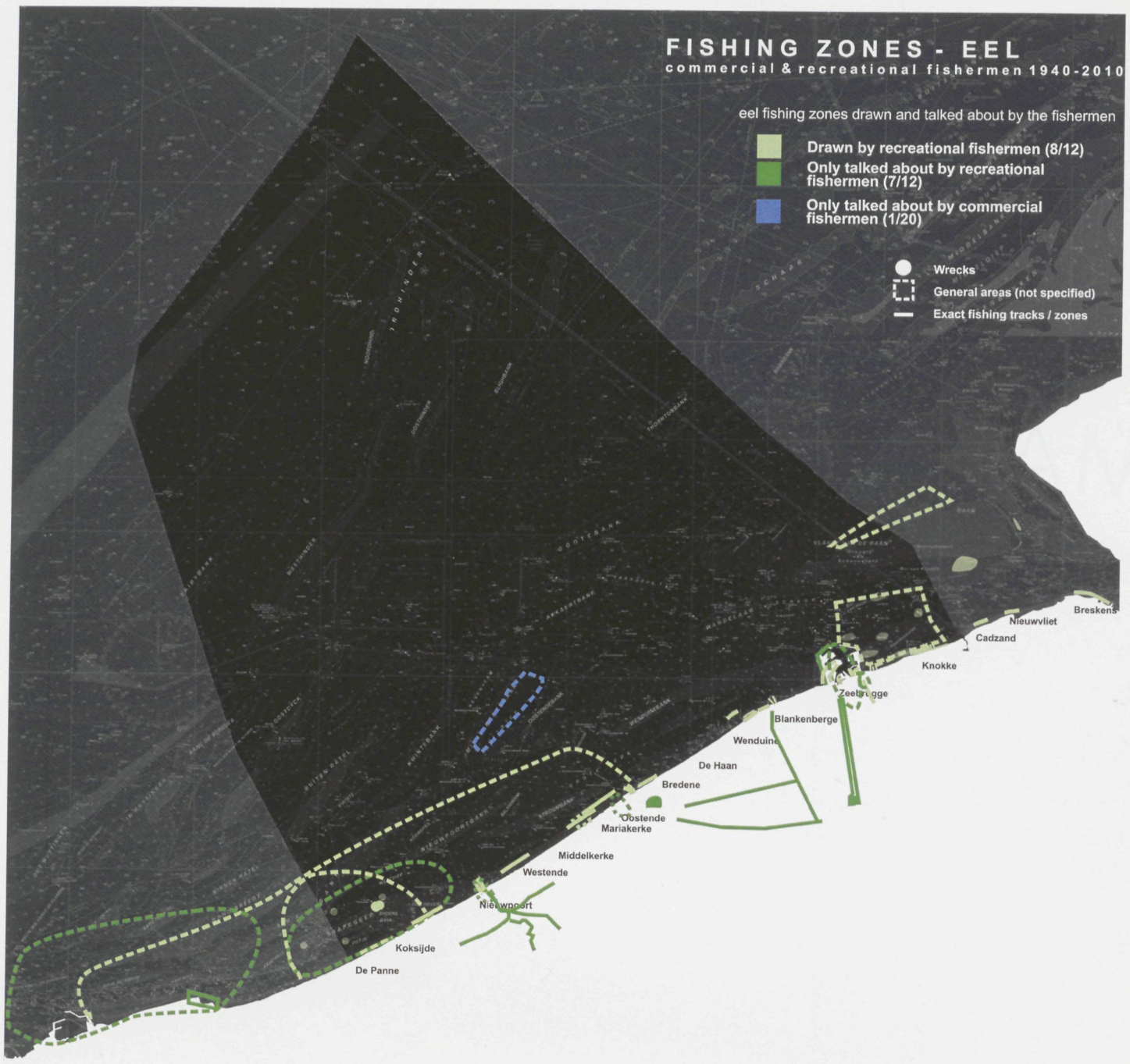
SEA BASS - other locations & spawning zones

commercial & recreational fishermen 1950 - 2010



MAPS SERIES IV

EEL

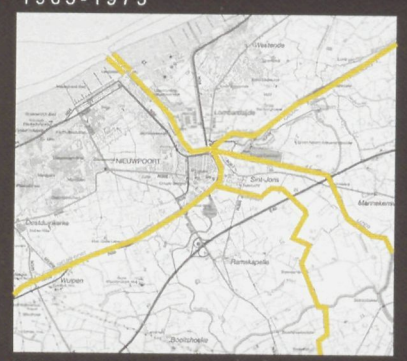


Nieuwpoort
1983-1996



Exact fishing locations for eel, only winter time (starting in november)

Nieuwpoort area
1965-1975



Fishing locations for eel (may - sept)

Oostende area
1970-2010



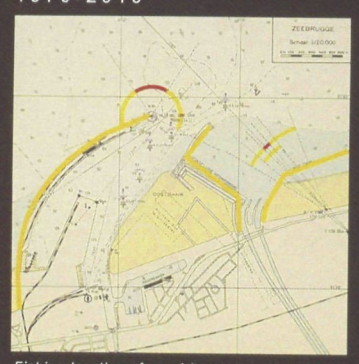
Fishing locations for eel in summer time (blue: seventies, yellow: 1970-2010)

Zeebrugge
1956-1965



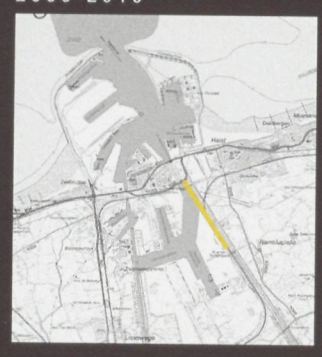
Fishing locations for eel, summer time (dotted line: more in winter time, more exceptional)

Zeebrugge
1970-2010



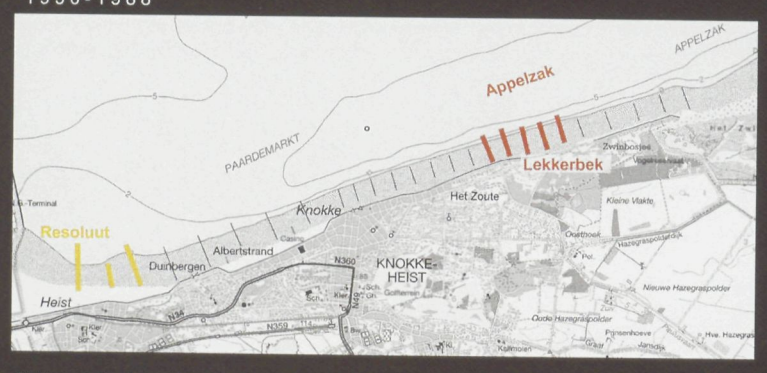
Fishing locations for eel in summer time (starting from may)

Zeebrugge
2000-2010



Fishing location for whiting, bycatch eel in may

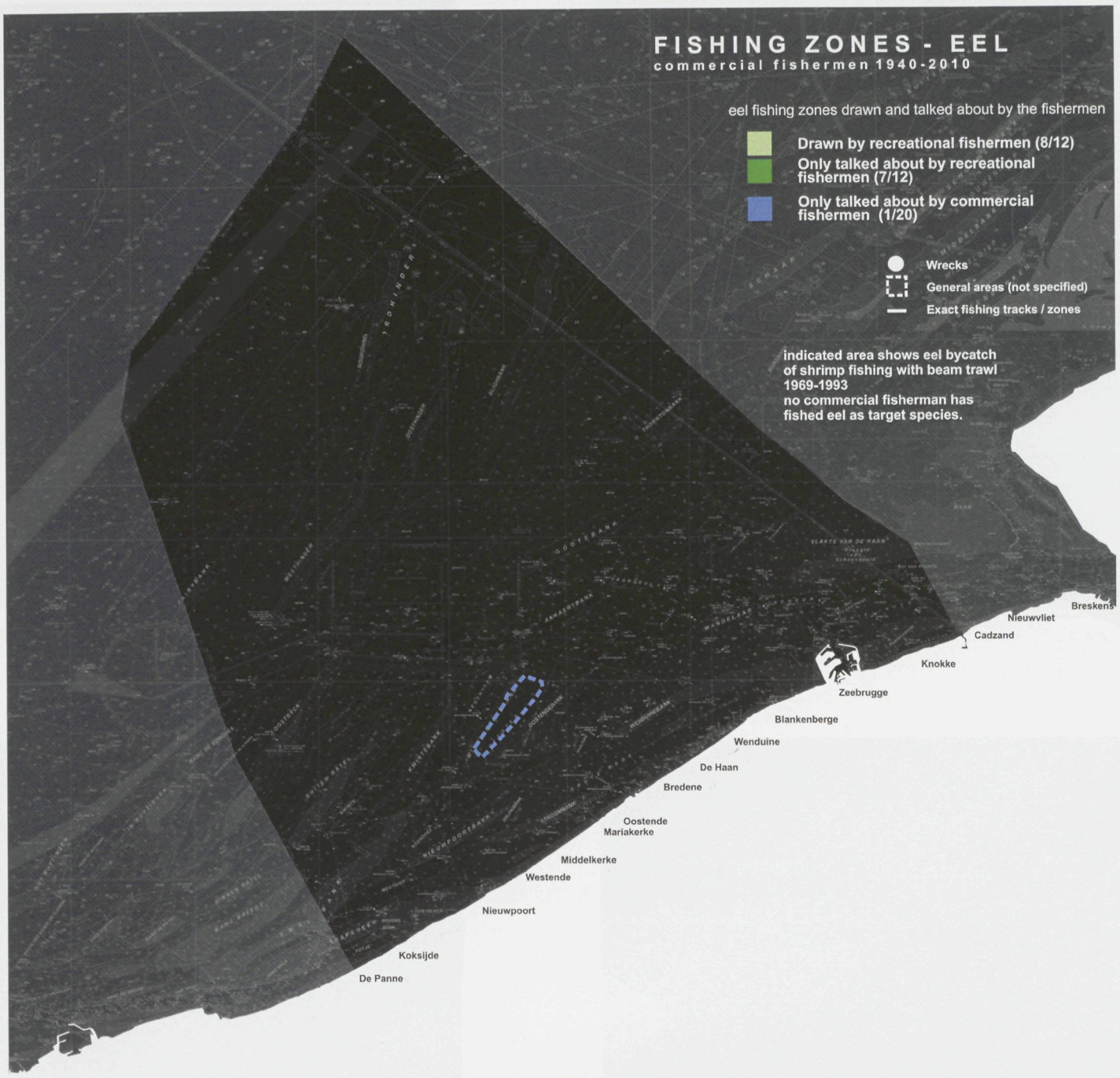
Knokke-Heist
1956-1988

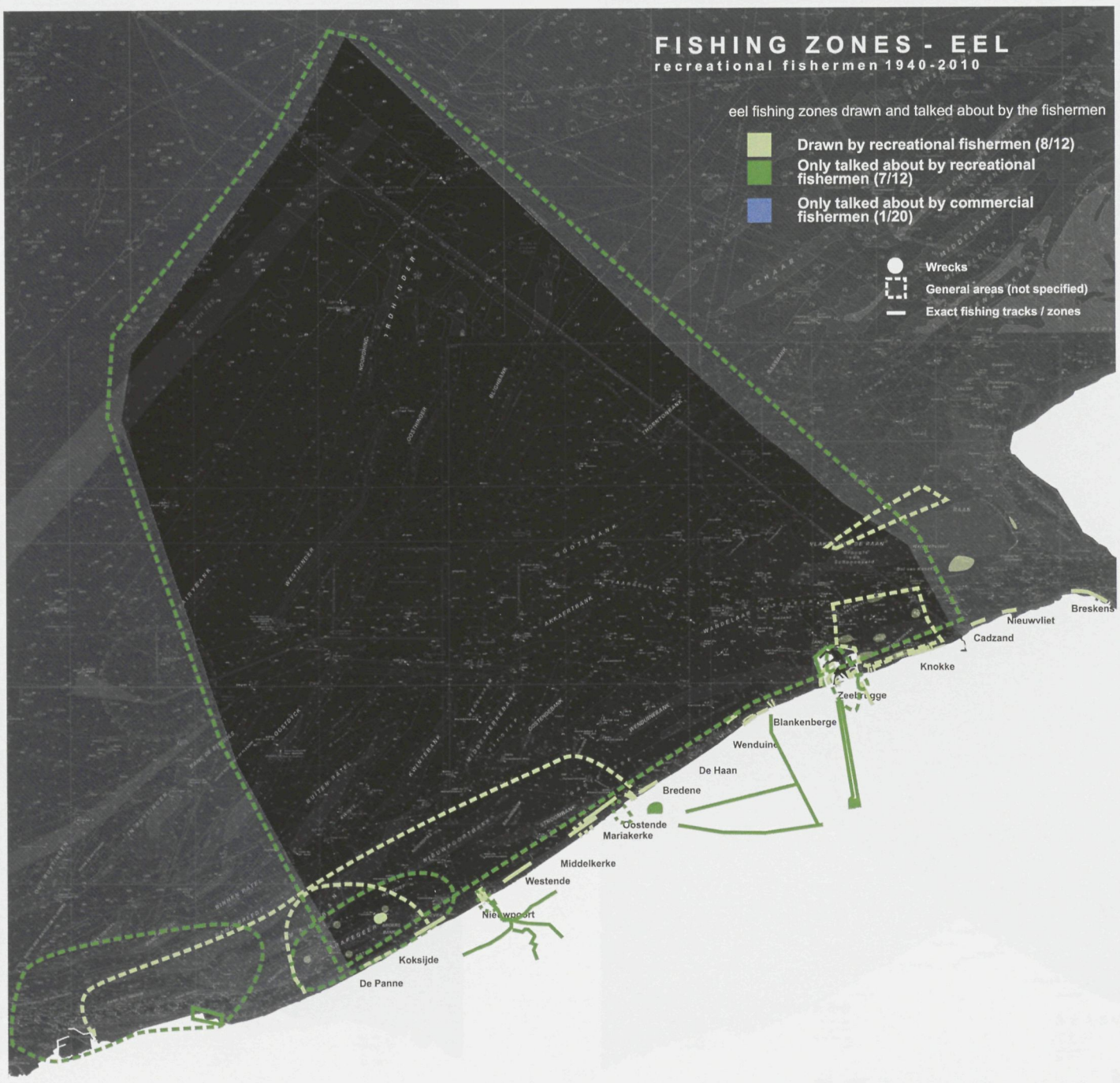


Fishing location for eel in summer time (may-oct, yellow: 1956-1965, orange: 1965-1988)

FISHING ZONES - EEL
recreational fishermen 1956-2010
eel fishing zones drawn by the fishermen - detailled maps

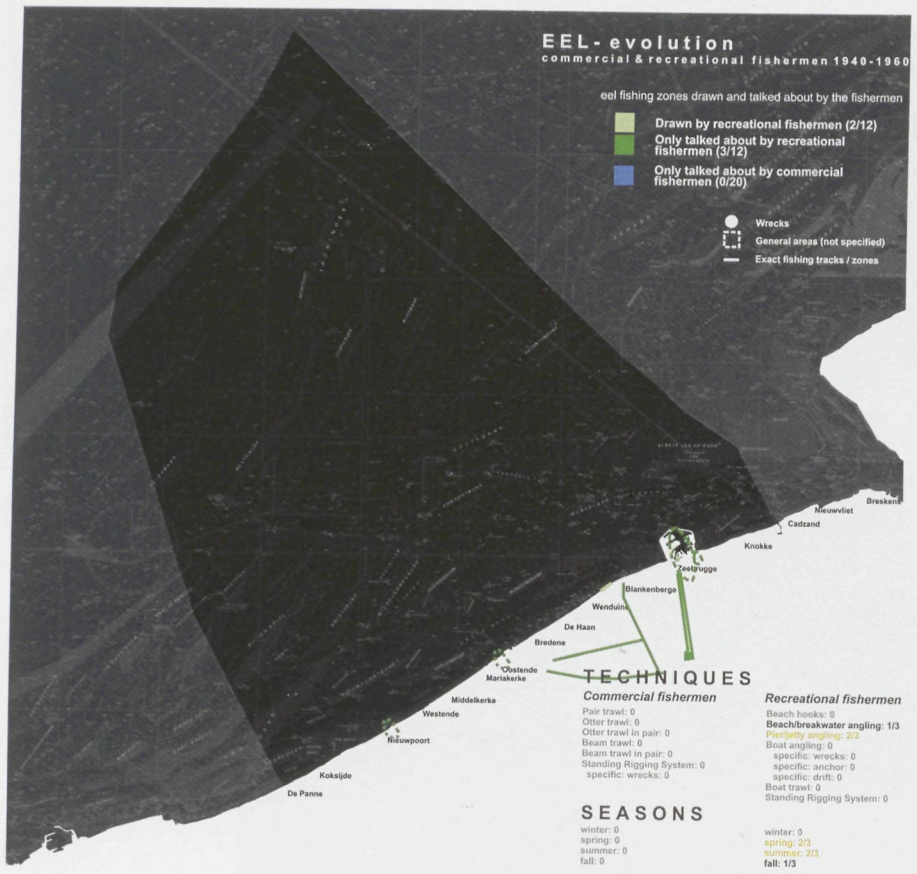
EEL - fishing zones
commercial & recreational fishermen 1940 - 2010

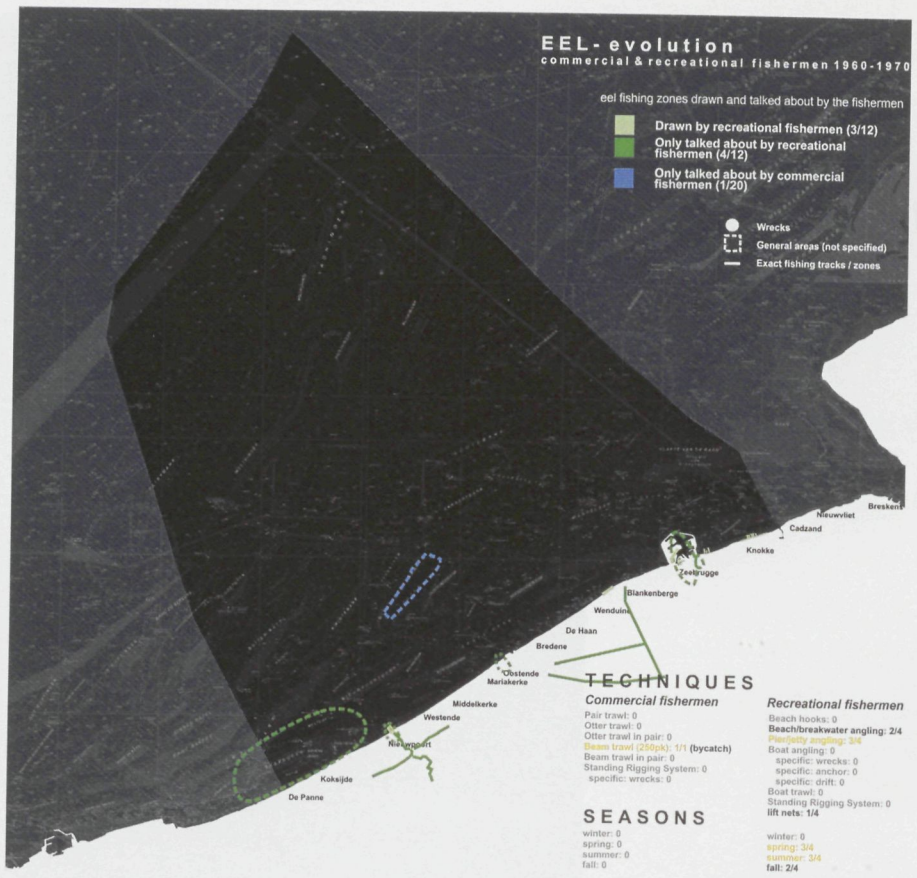


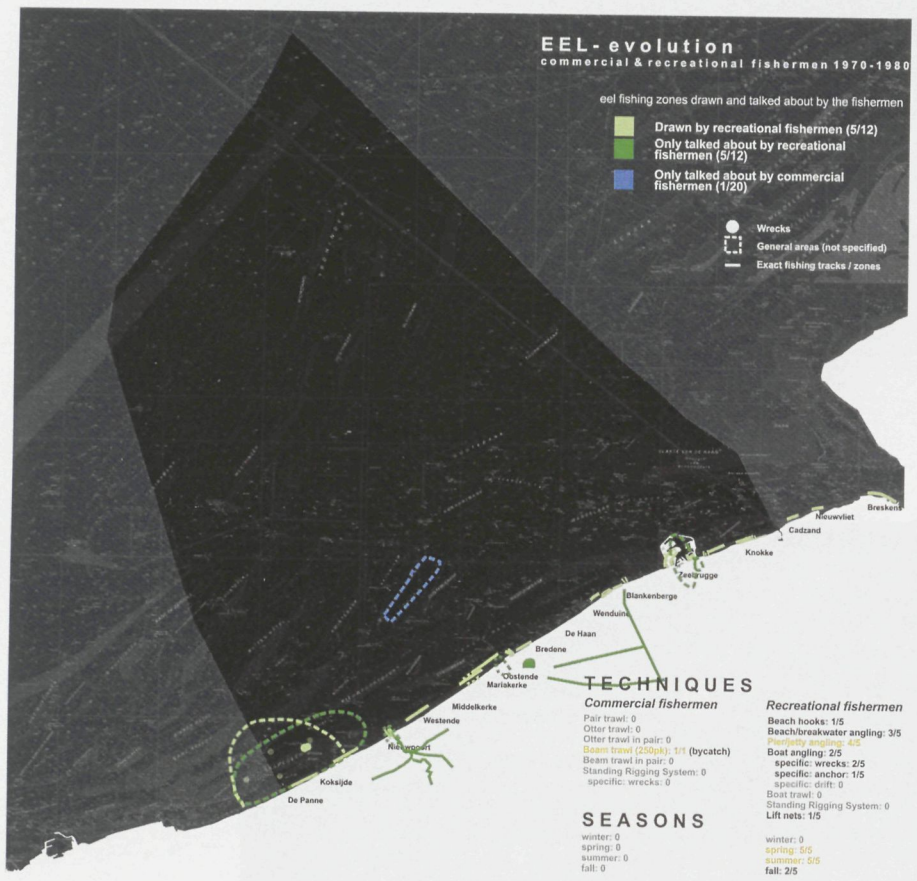


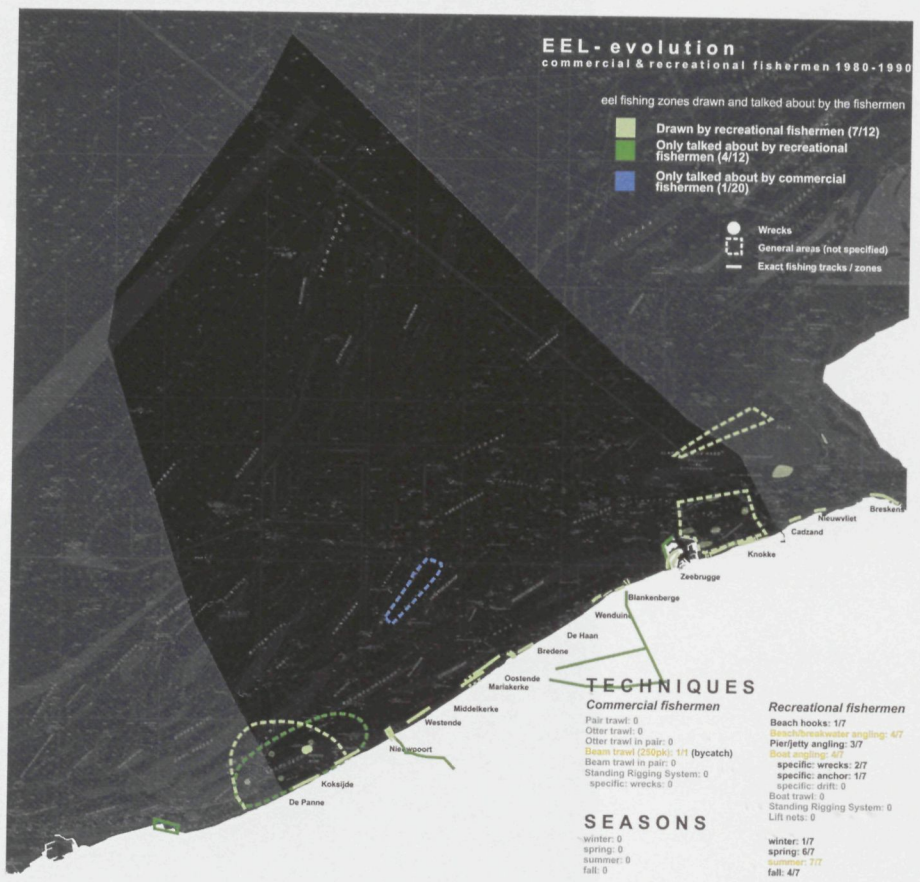
EEL - fishing zones

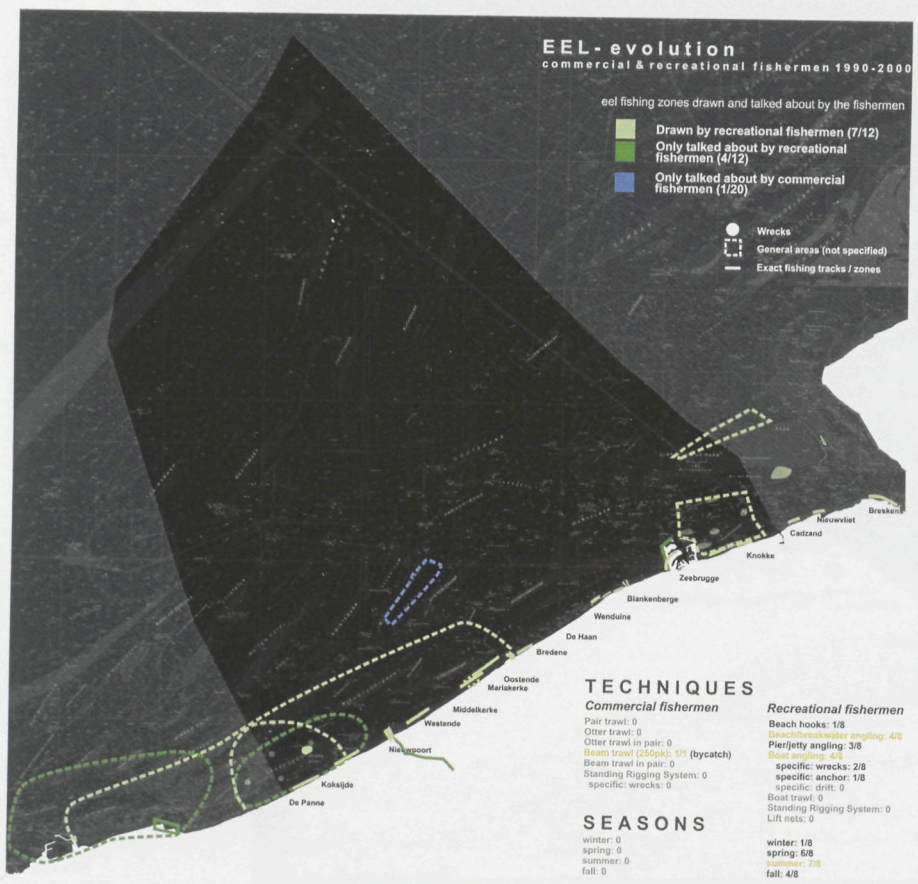
commercial & recreational fishermen 1940 - 2010

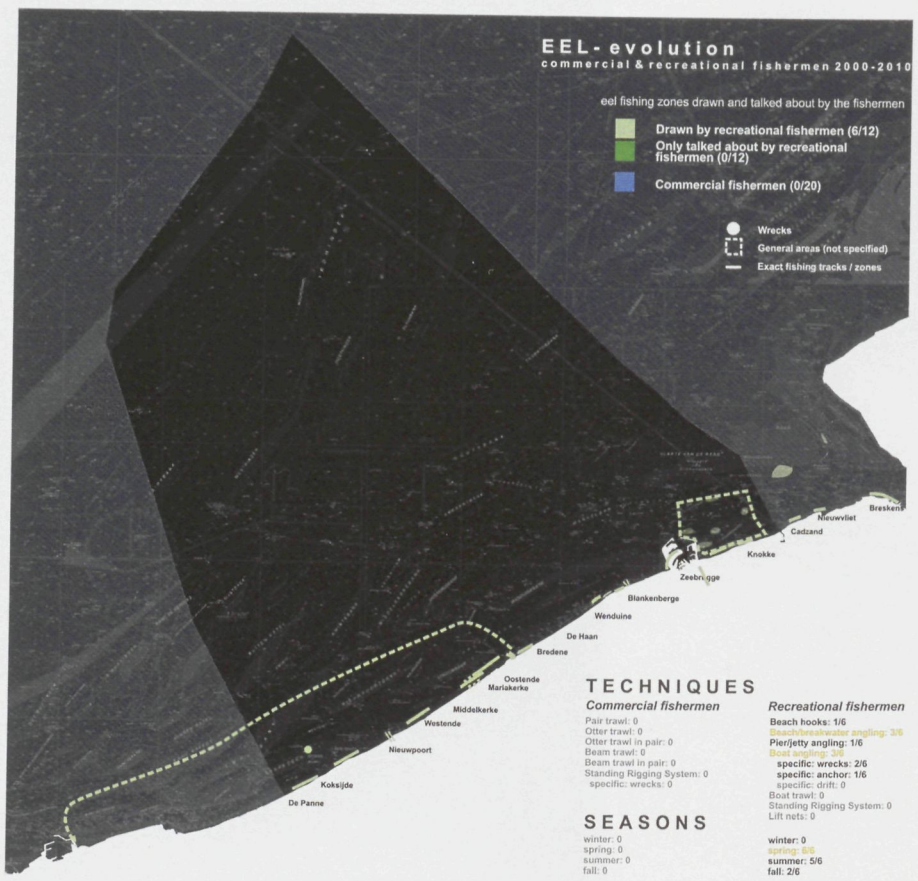






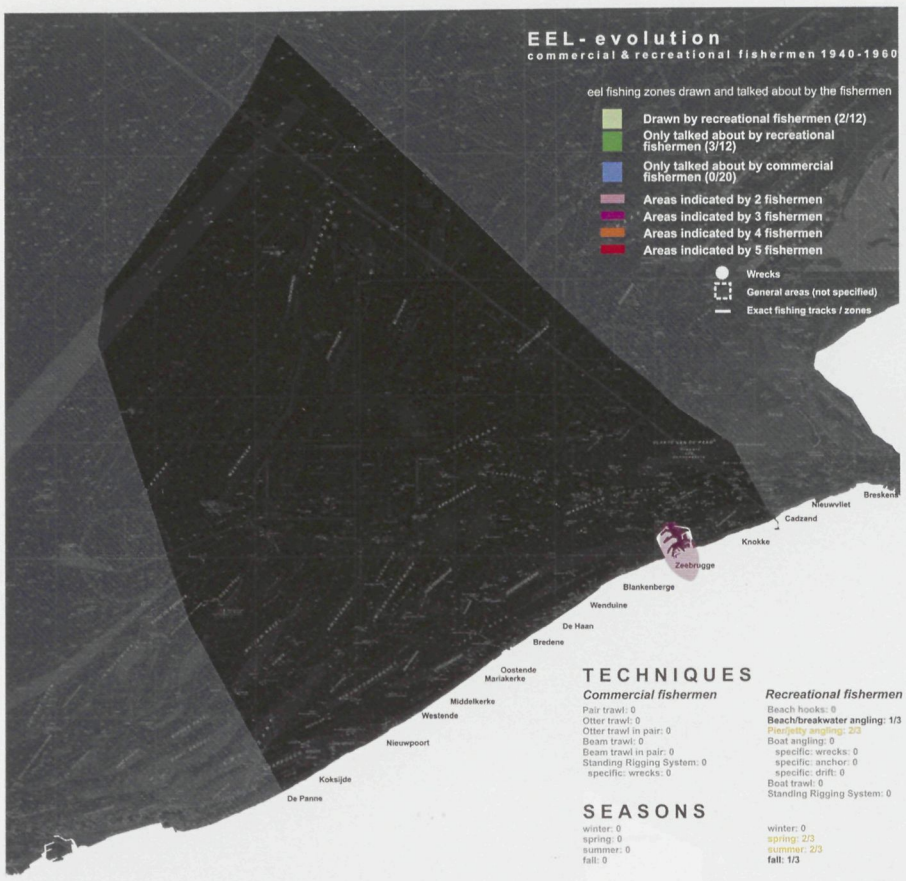


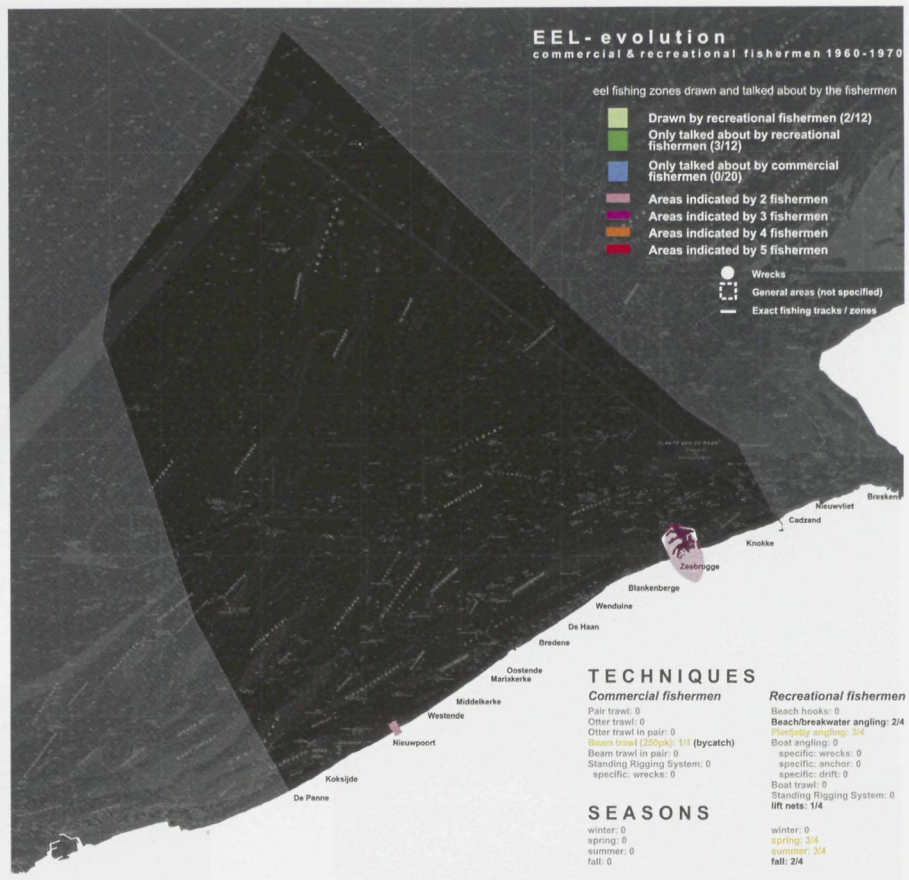


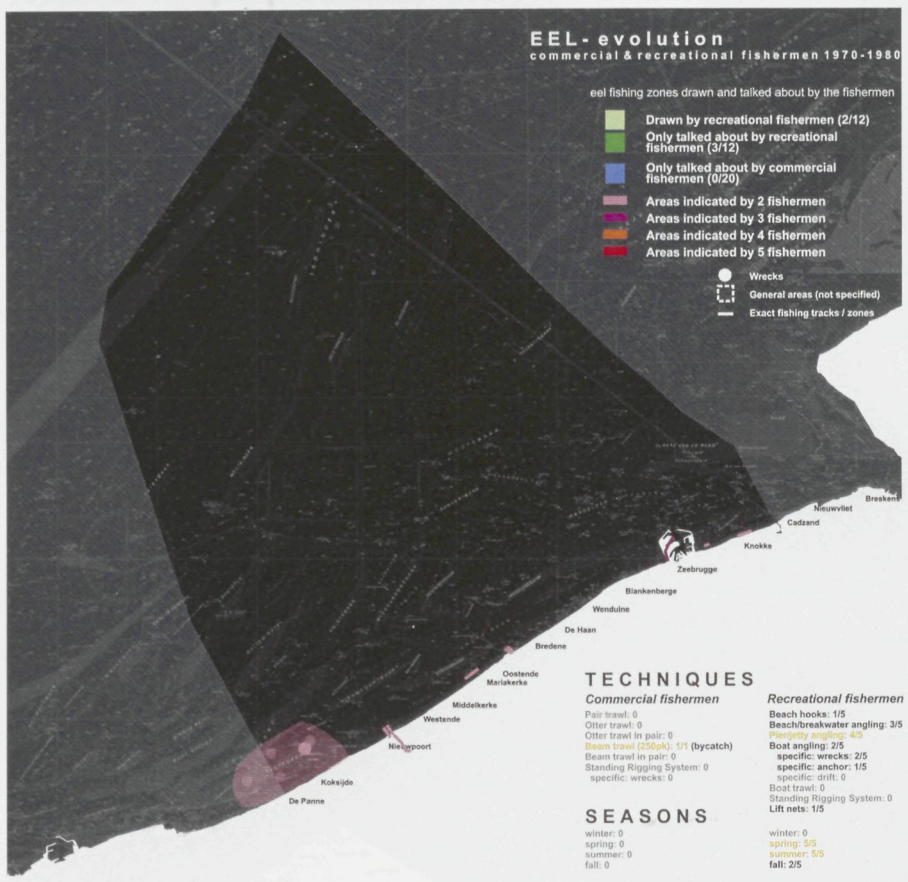


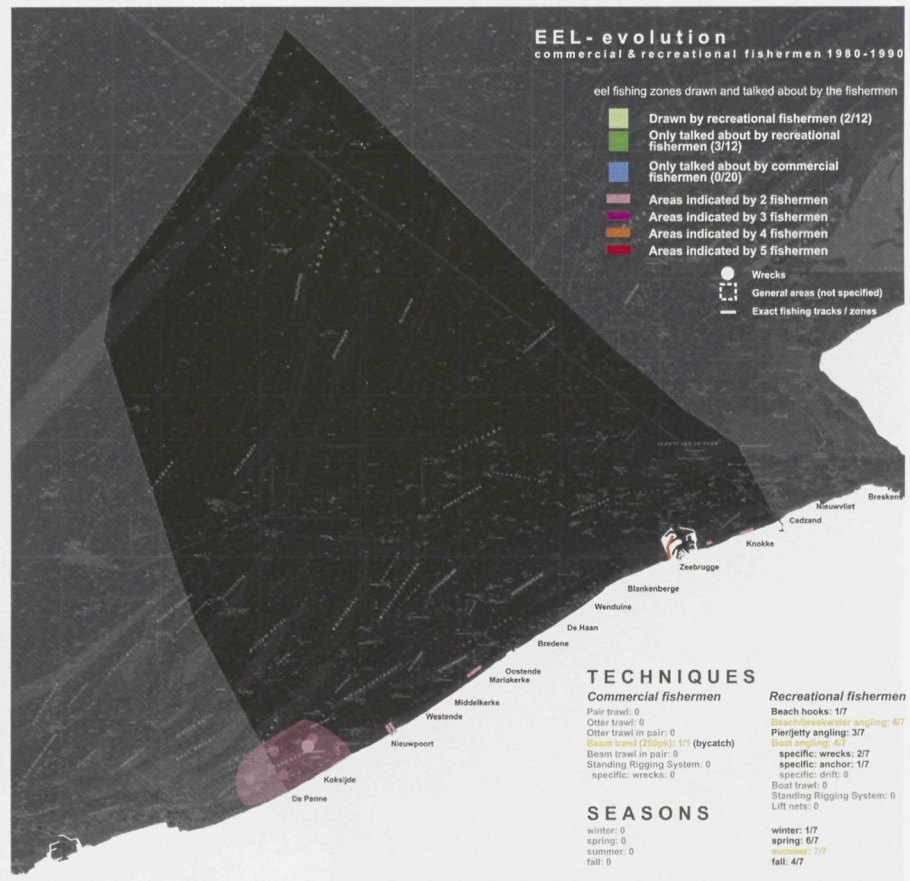
EEL - evolution

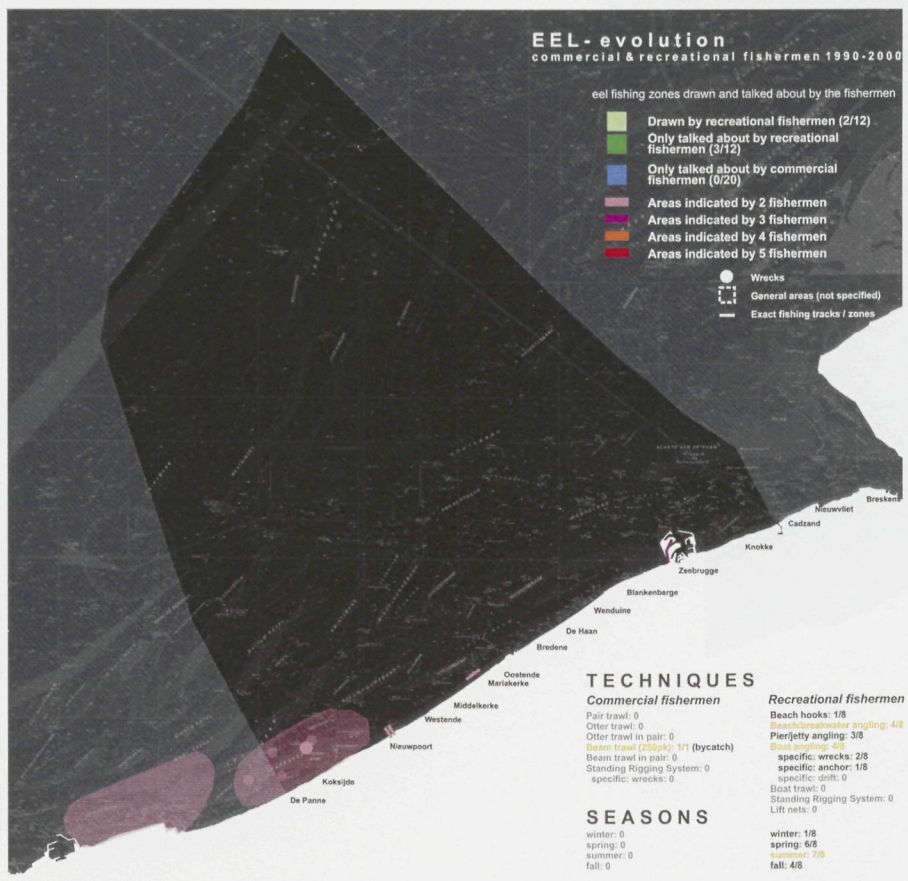
recreational & commercial fishermen 1940 - 2010

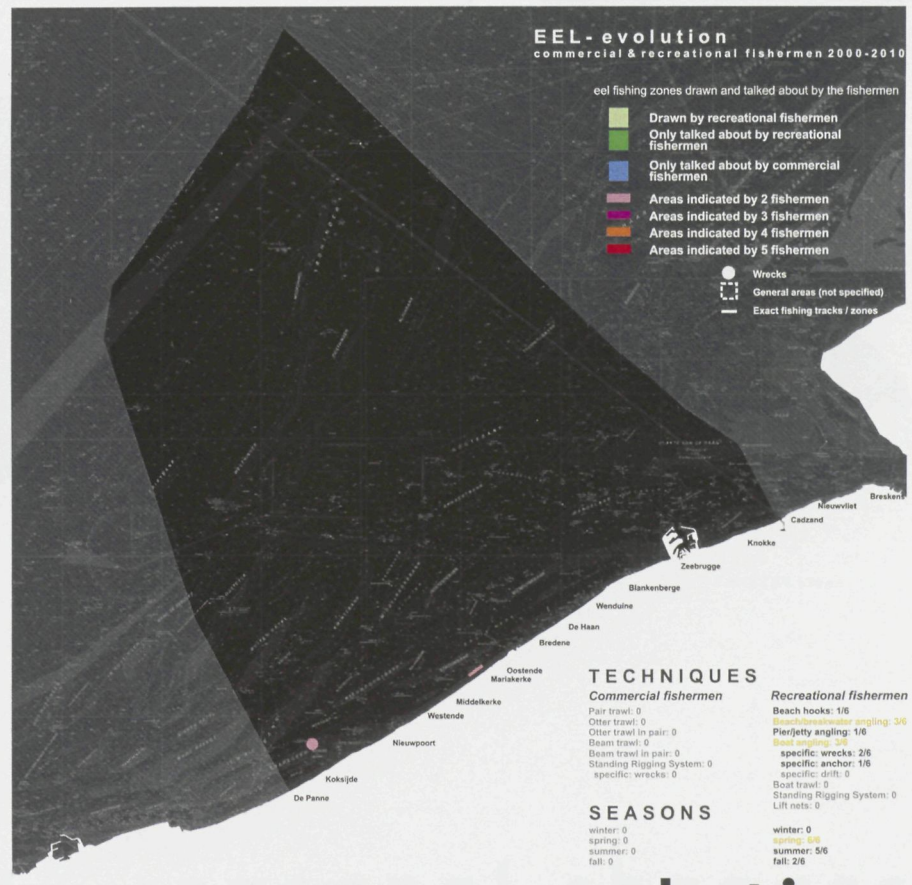








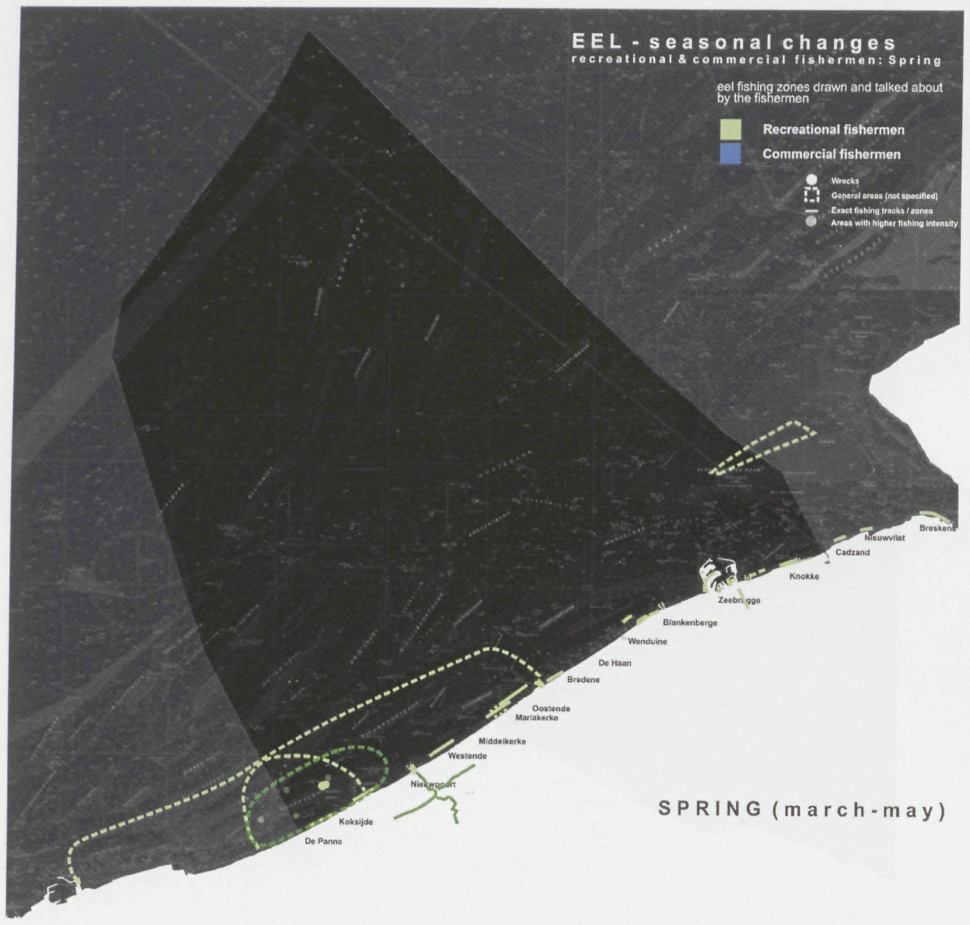




EEL - evolution

commercial & recreational fishermen 1940 - 2010

areas fished by 2 or more fishermen









EEL - seasonal changes

commercial & recreational fishermen 1940 - 2010



WINTER (jan)



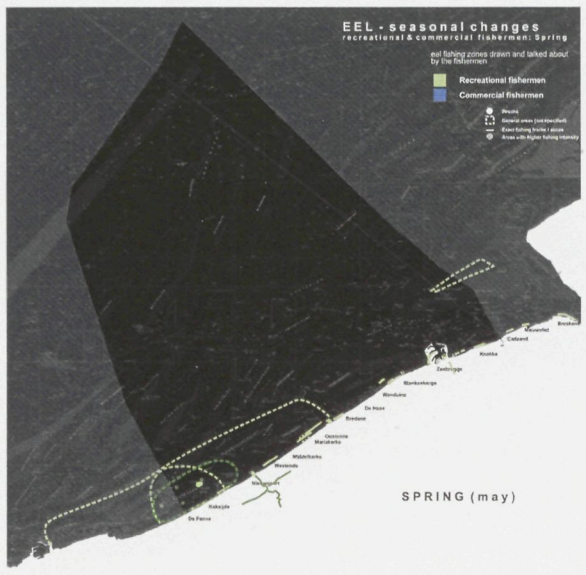
WINTER (feb)



SPRING (march)



SPRING (april)



SPRING (may)



SUMMER (june)



SUMMER (july)



SUMMER (aug)



AUTUMN (sept)



AUTUMN (oct)



AUTUMN (nov)



WINTER (dec)

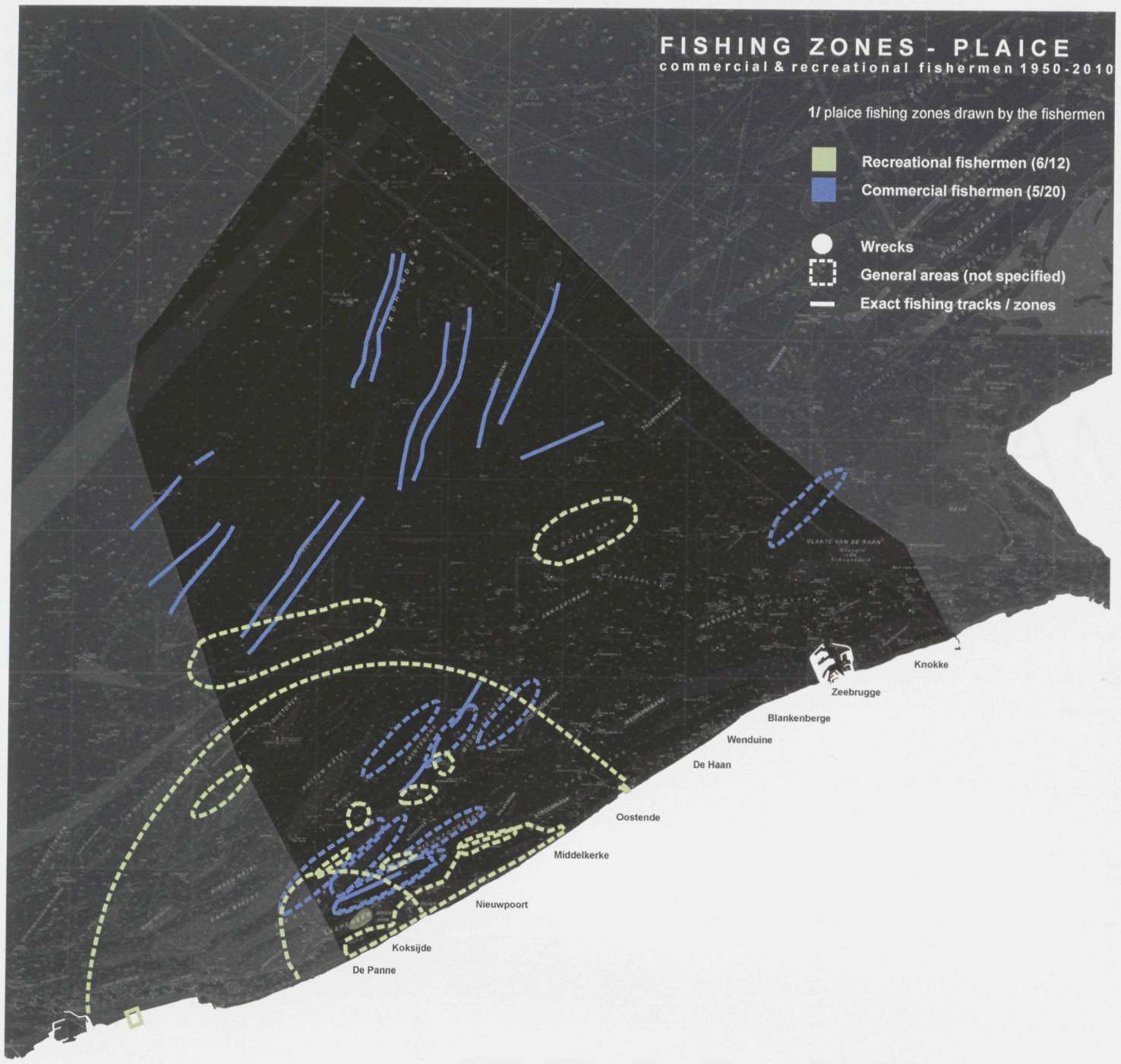
EEL - seasonal changes january-december

commercial & recreational fishermen 1940 - 2010



MAPS SERIES V

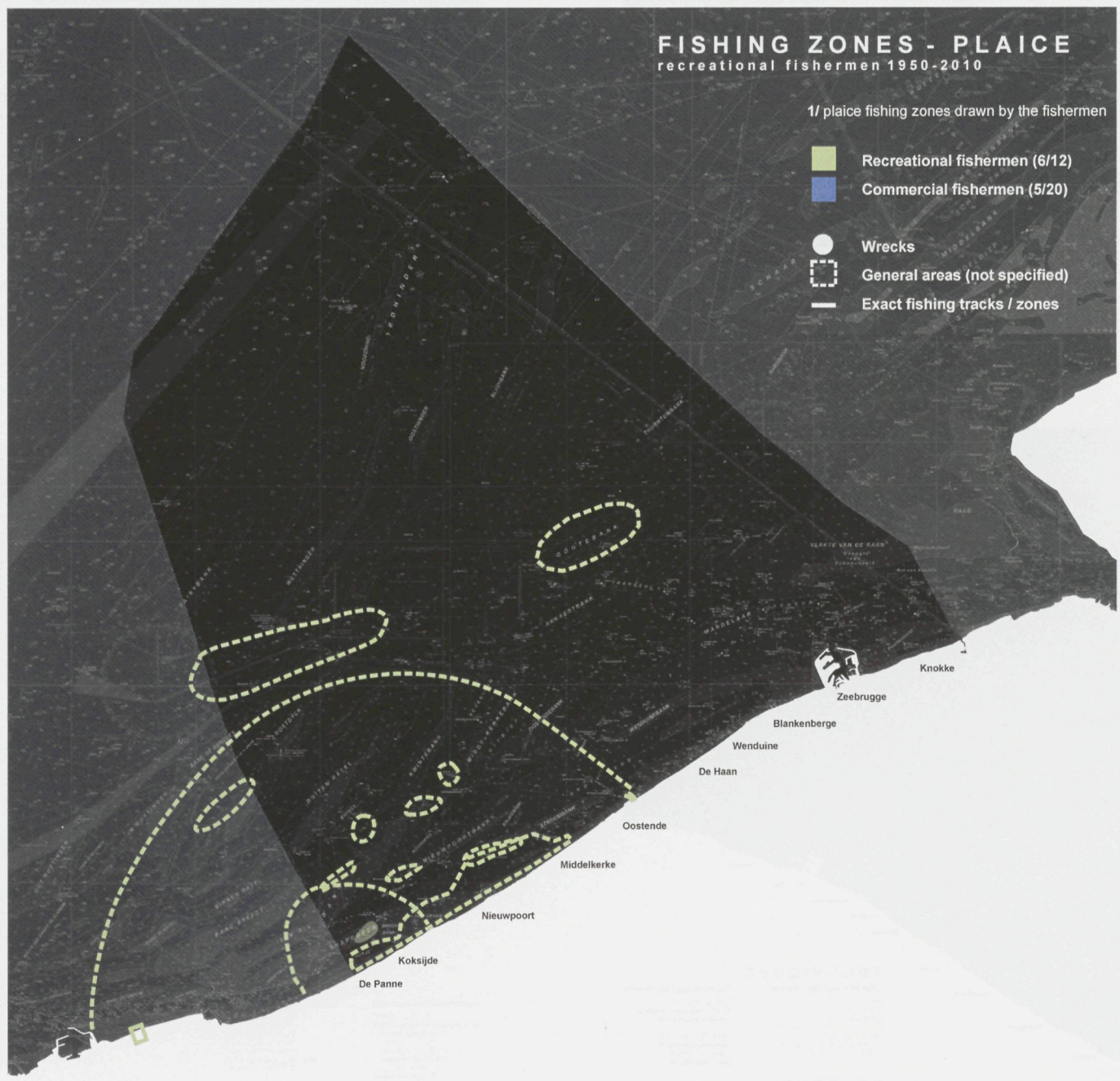
PLAICE



PLAICE - fishing zones

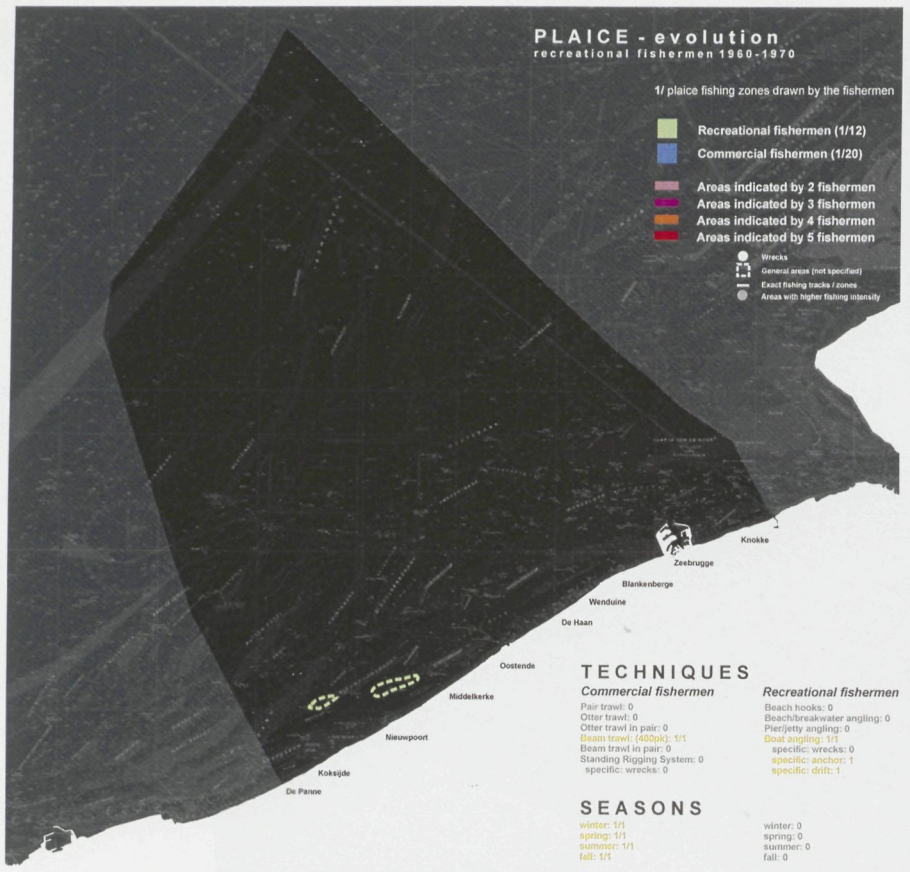
commercial & recreational fishermen 1950 - 2010

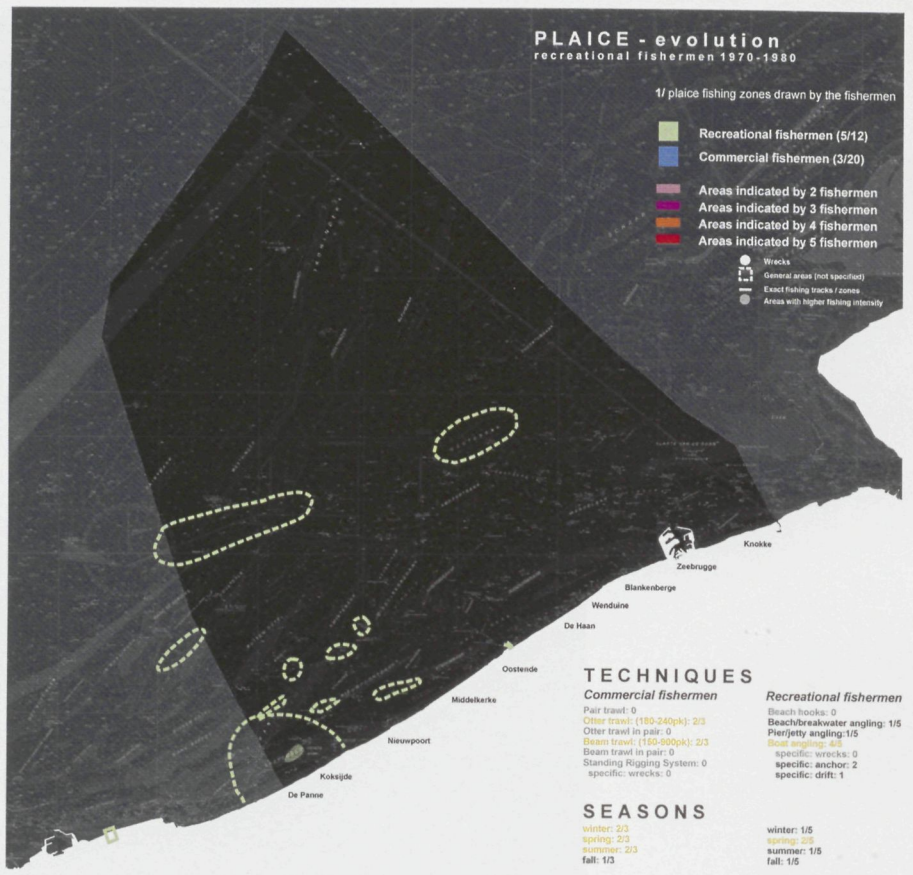


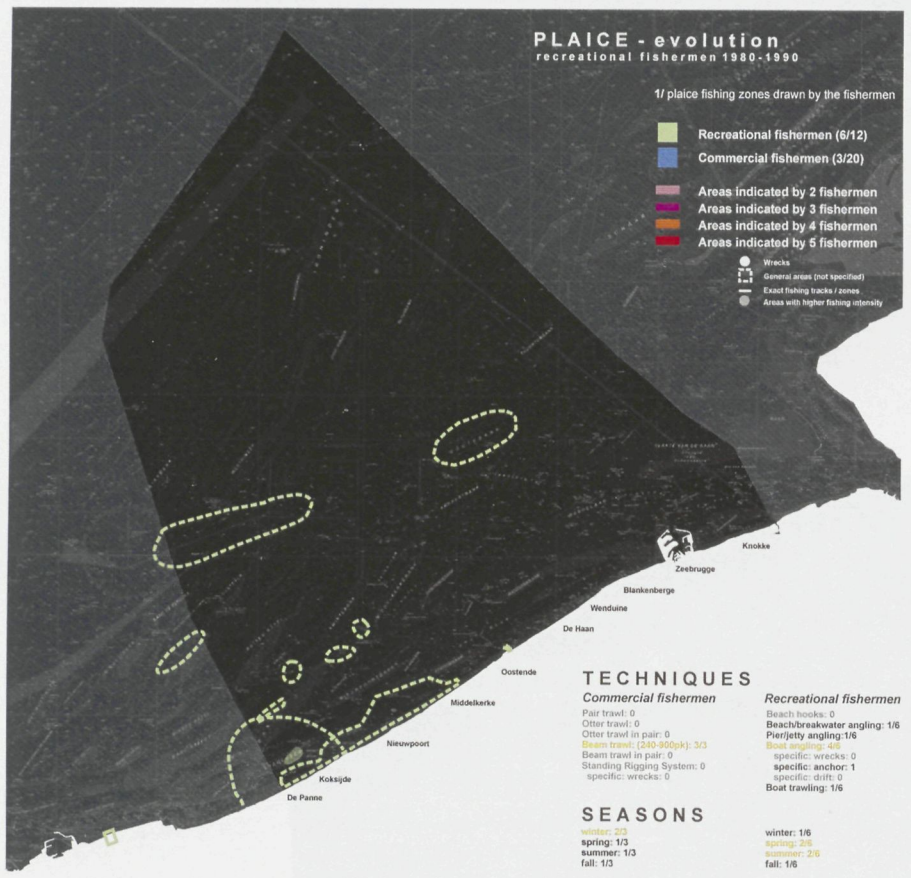


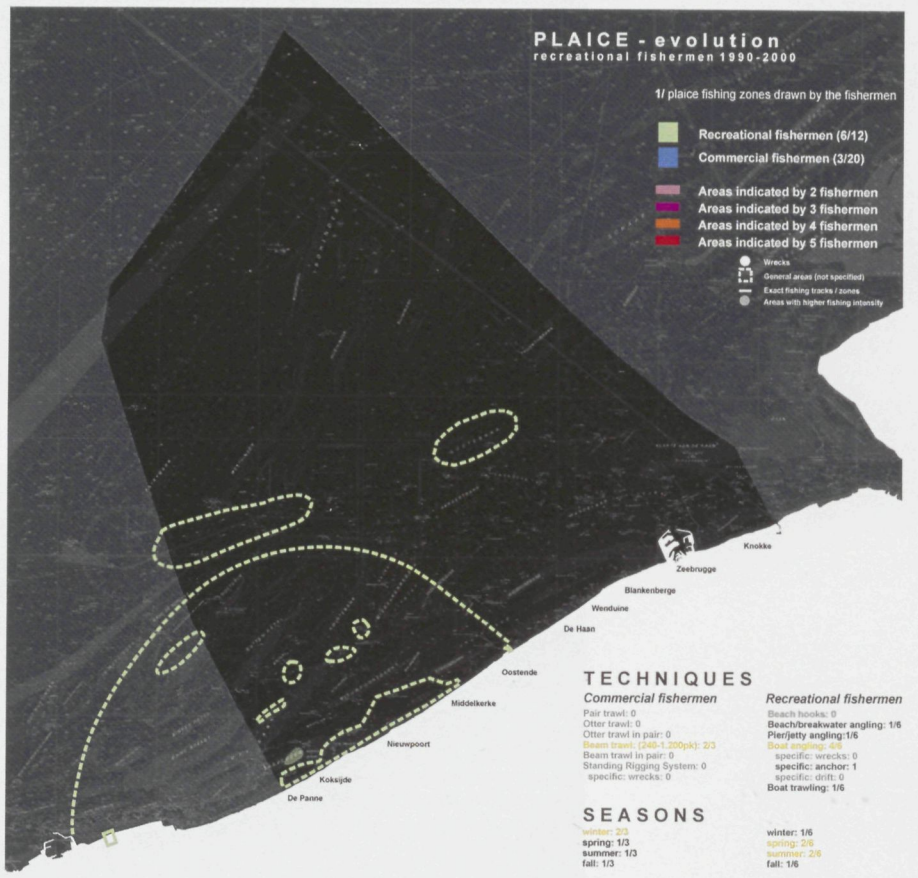
PLAICE - fishing zones

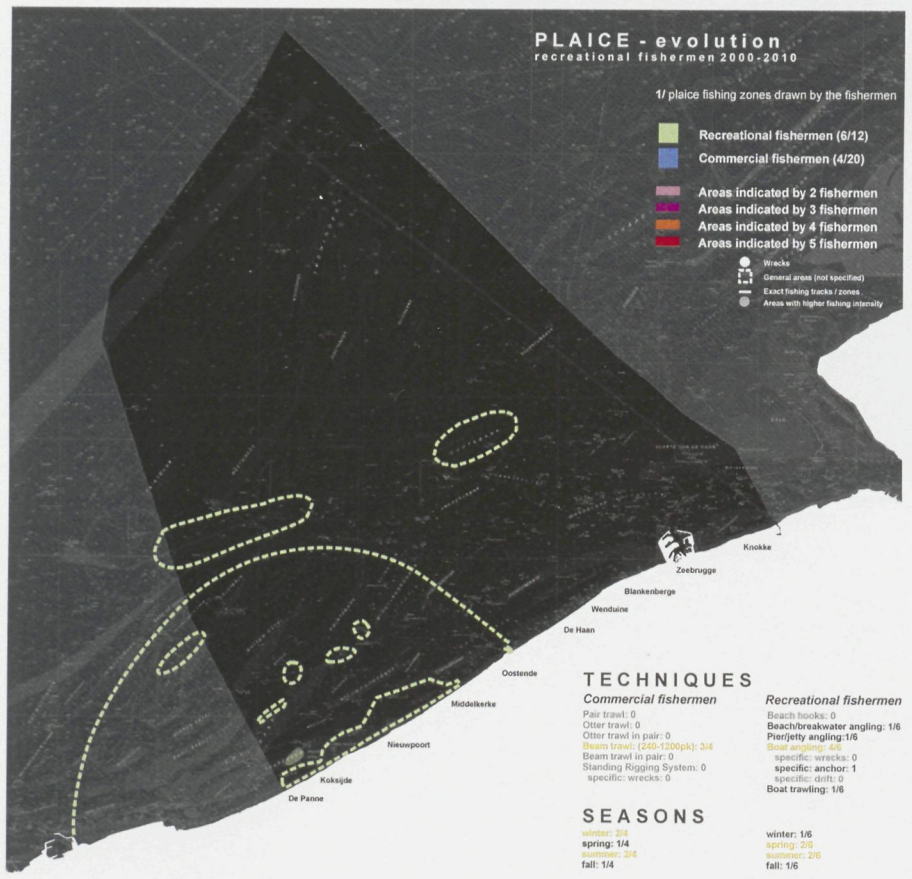
commercial & recreational fishermen 1950 - 2010





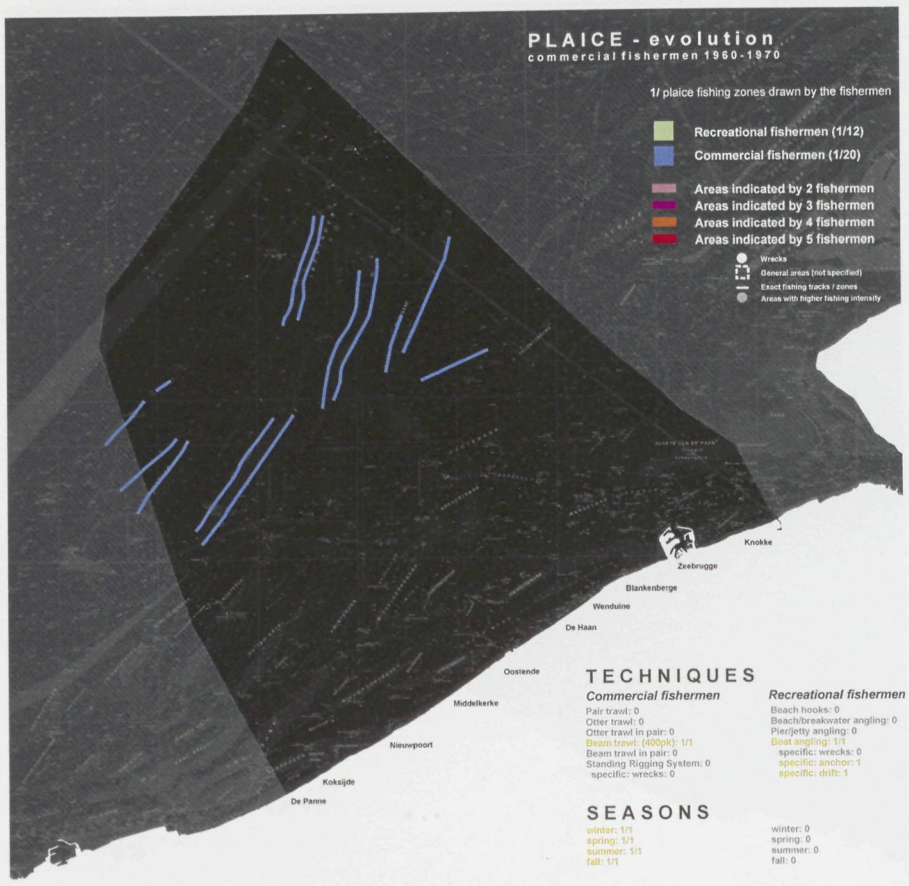


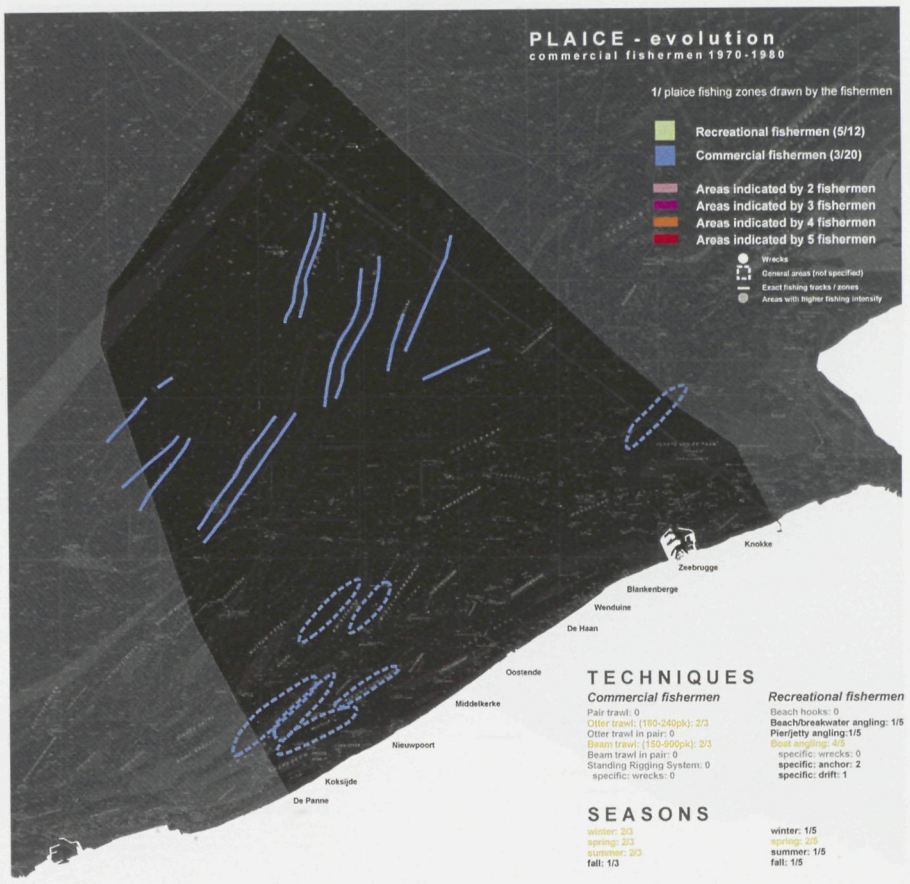


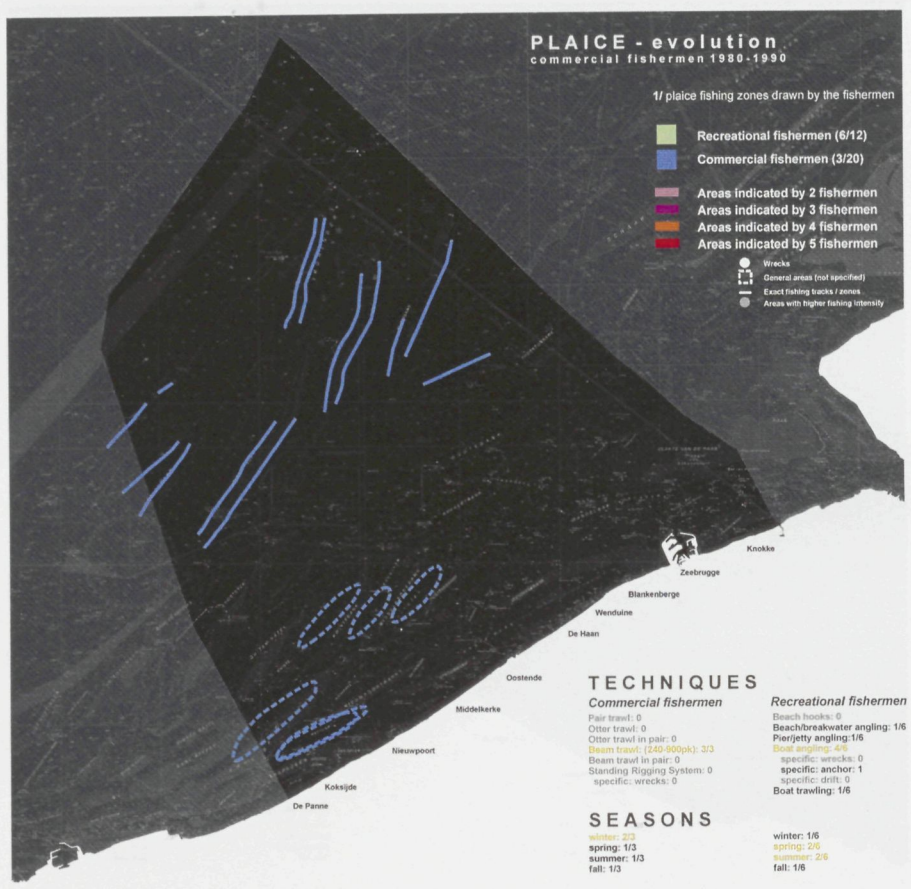


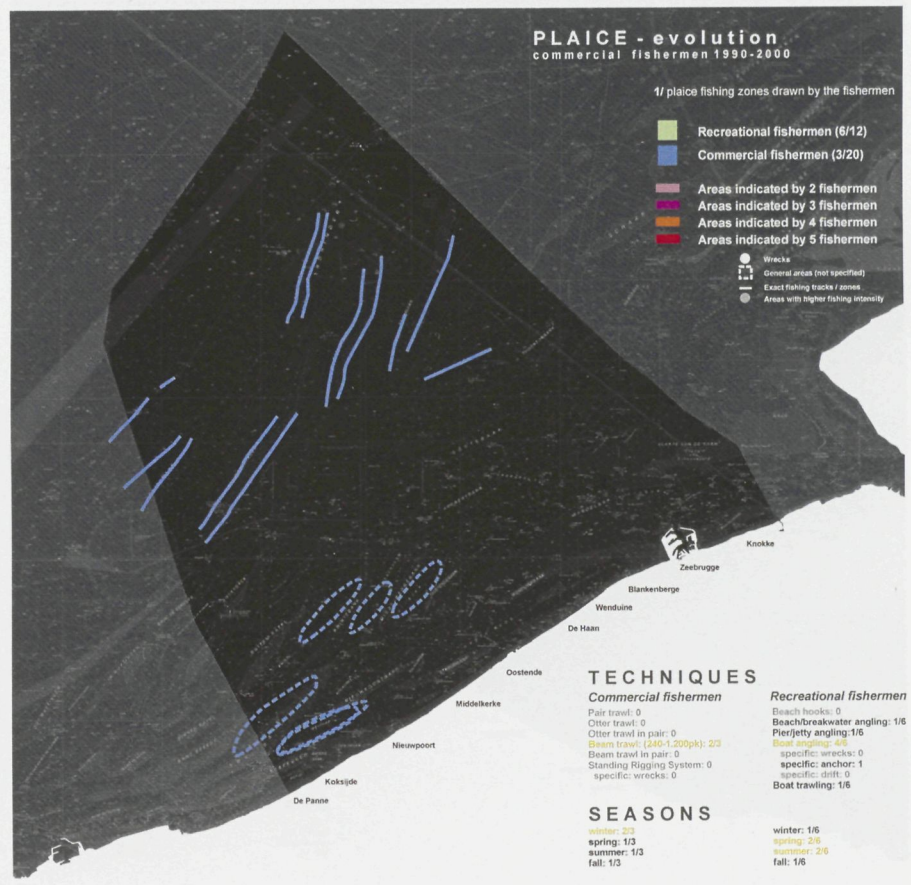
PLAICE - evolution

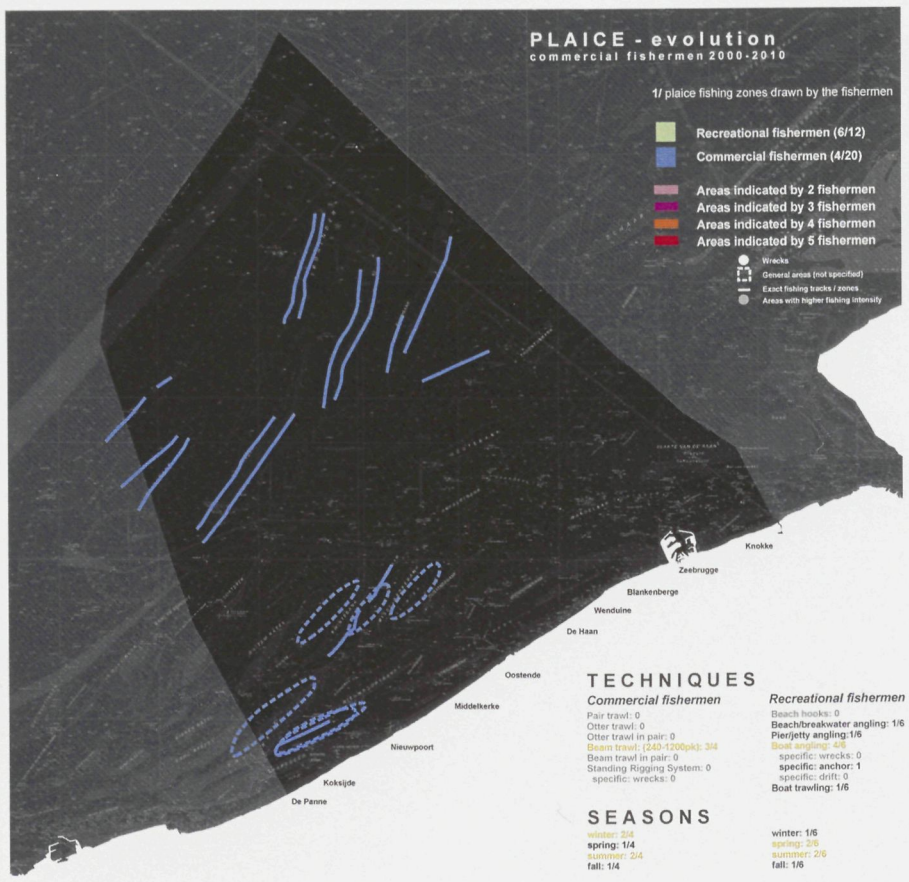
recreational fishermen 1960 - 2010





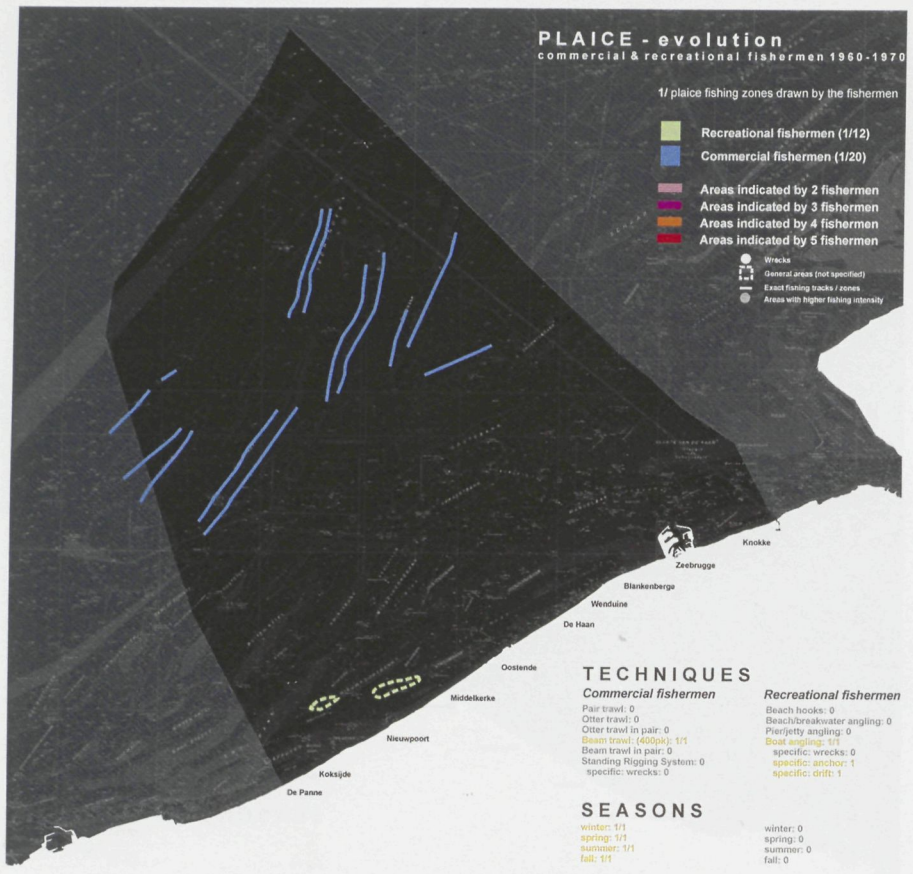


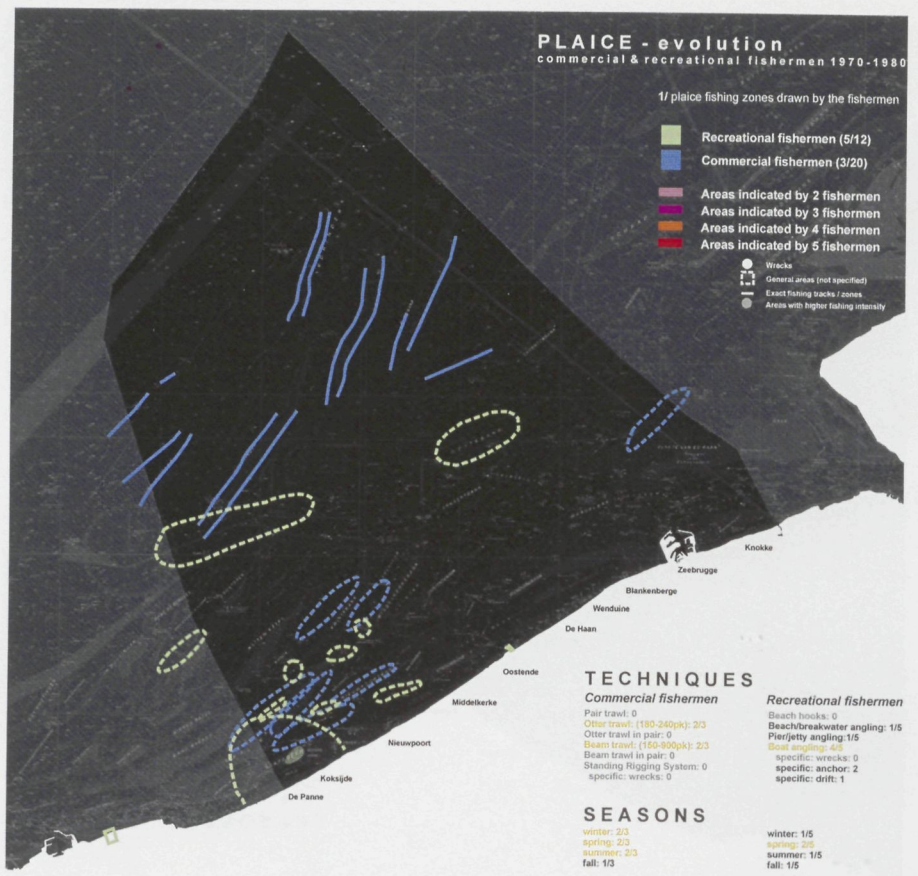


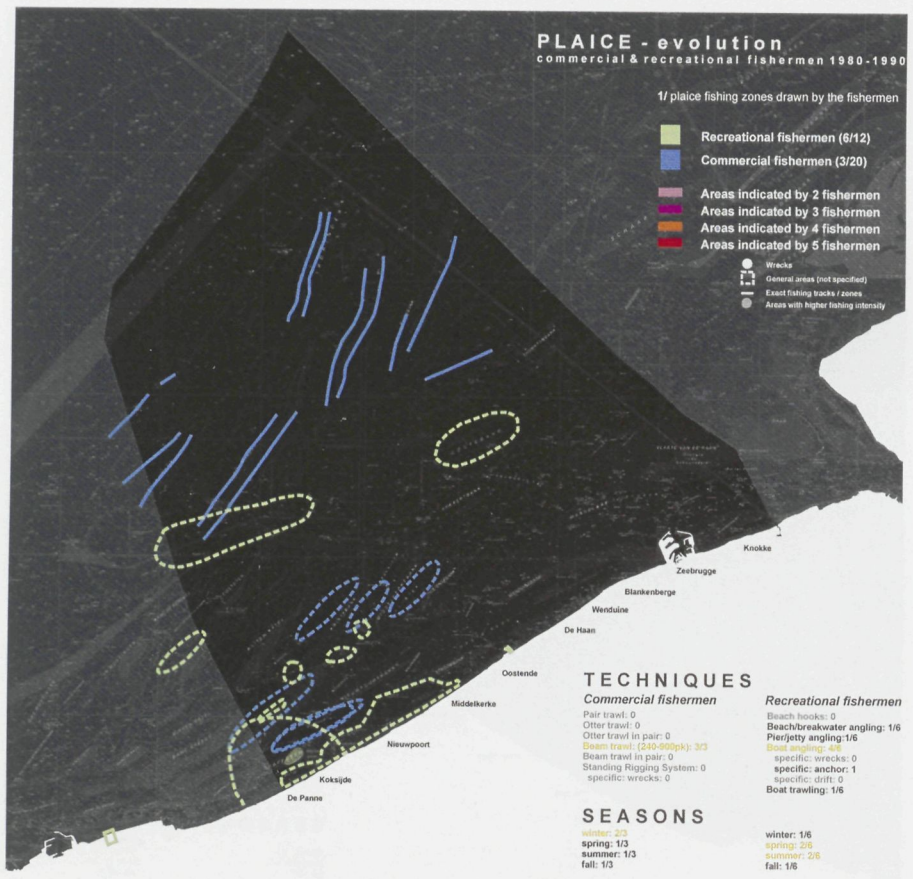


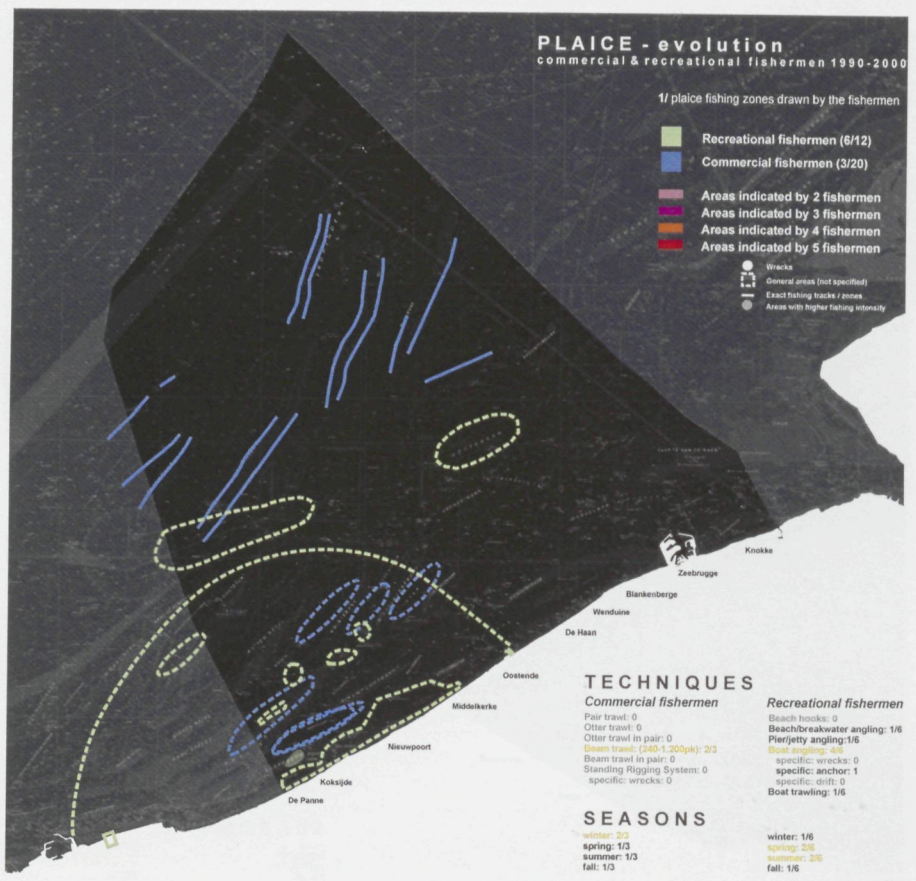
PLAICE - evolution

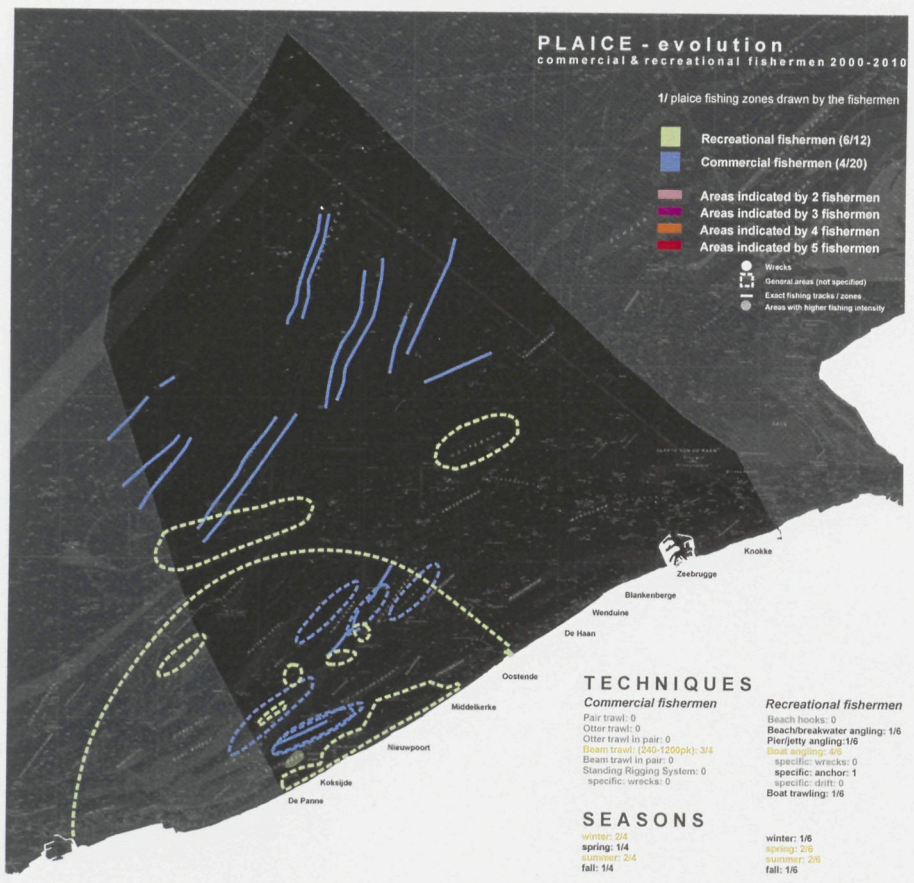
commercial fishermen 1960 - 2010





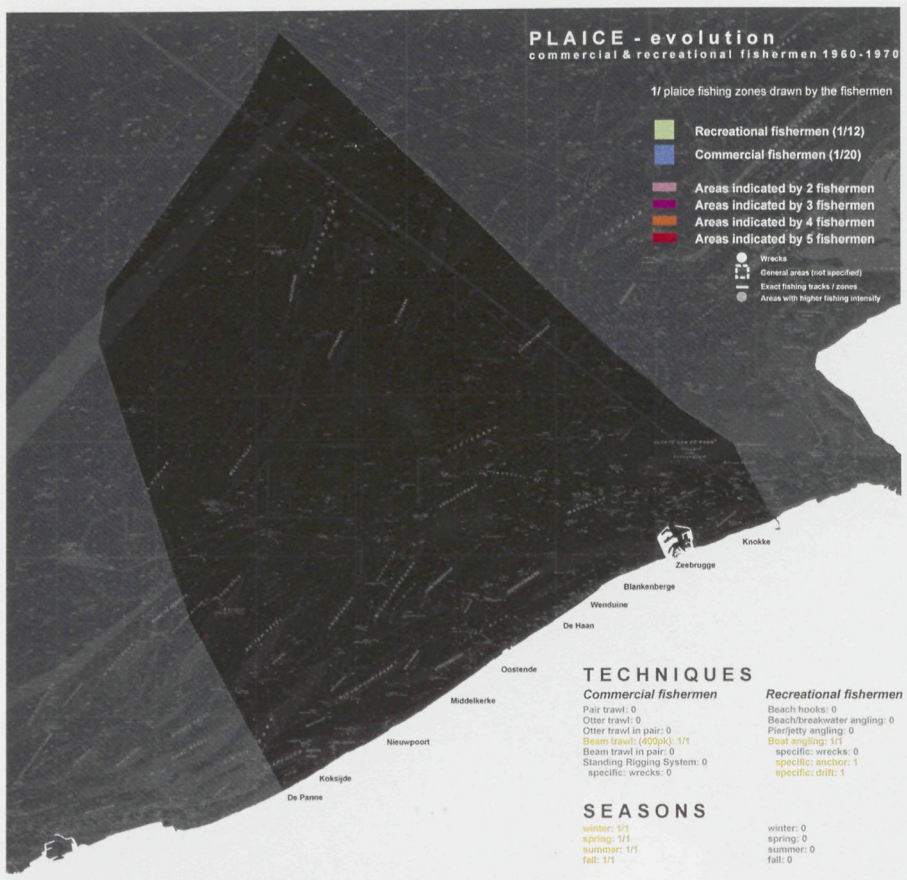


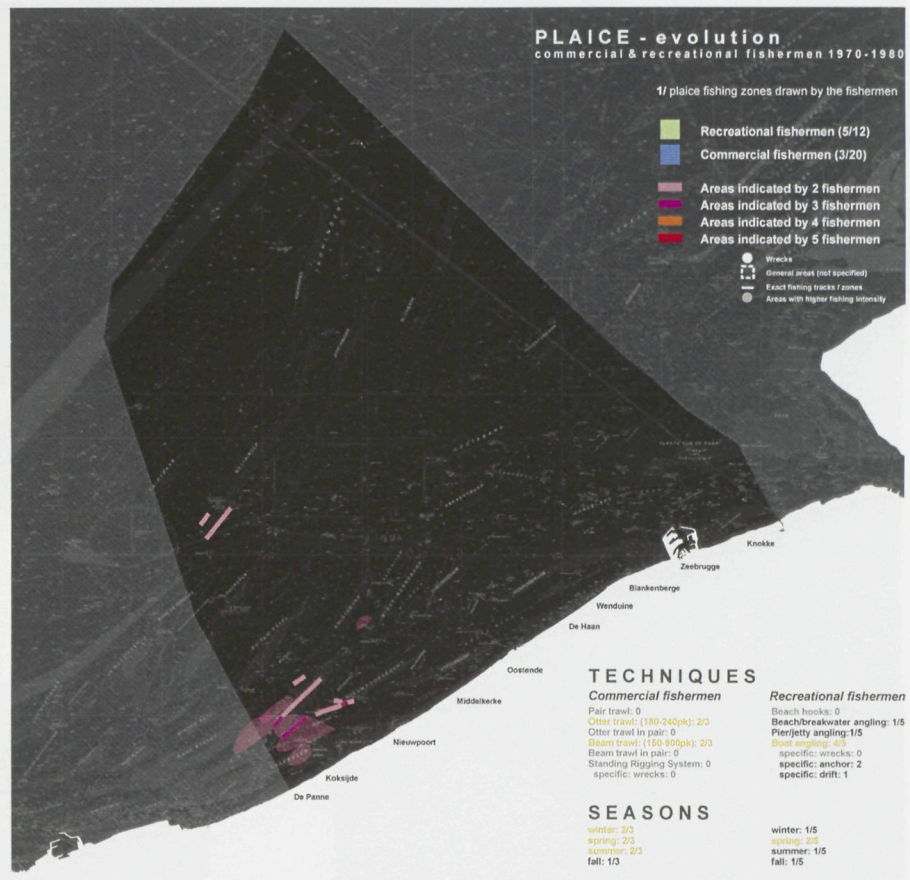


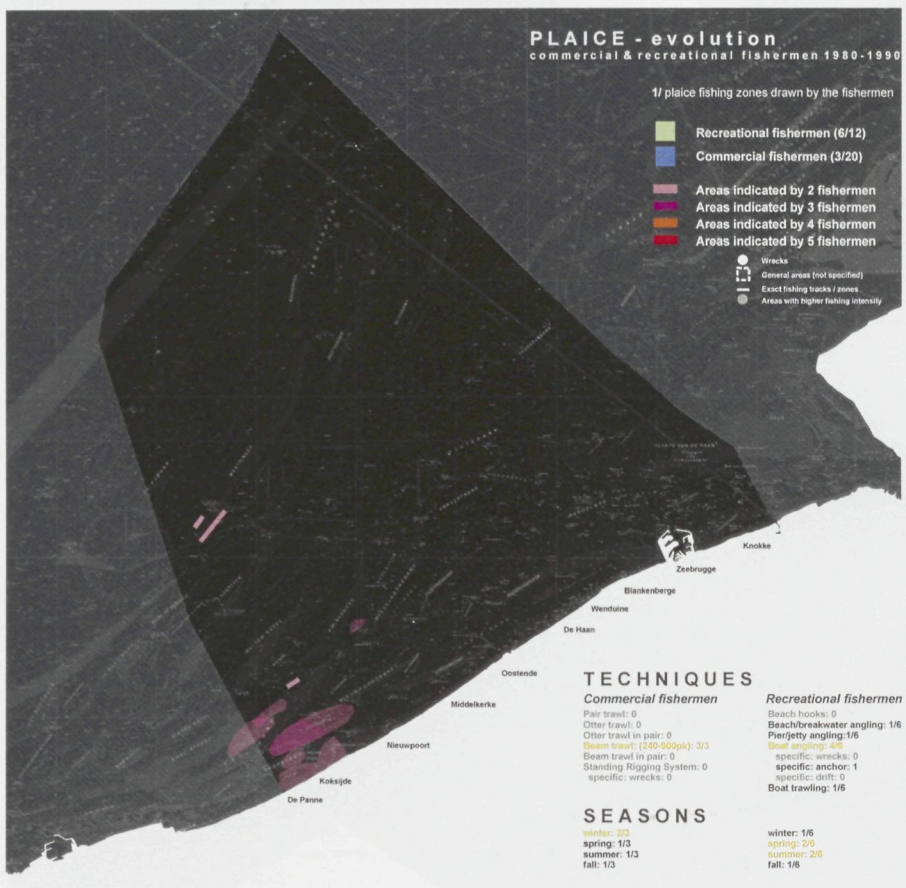


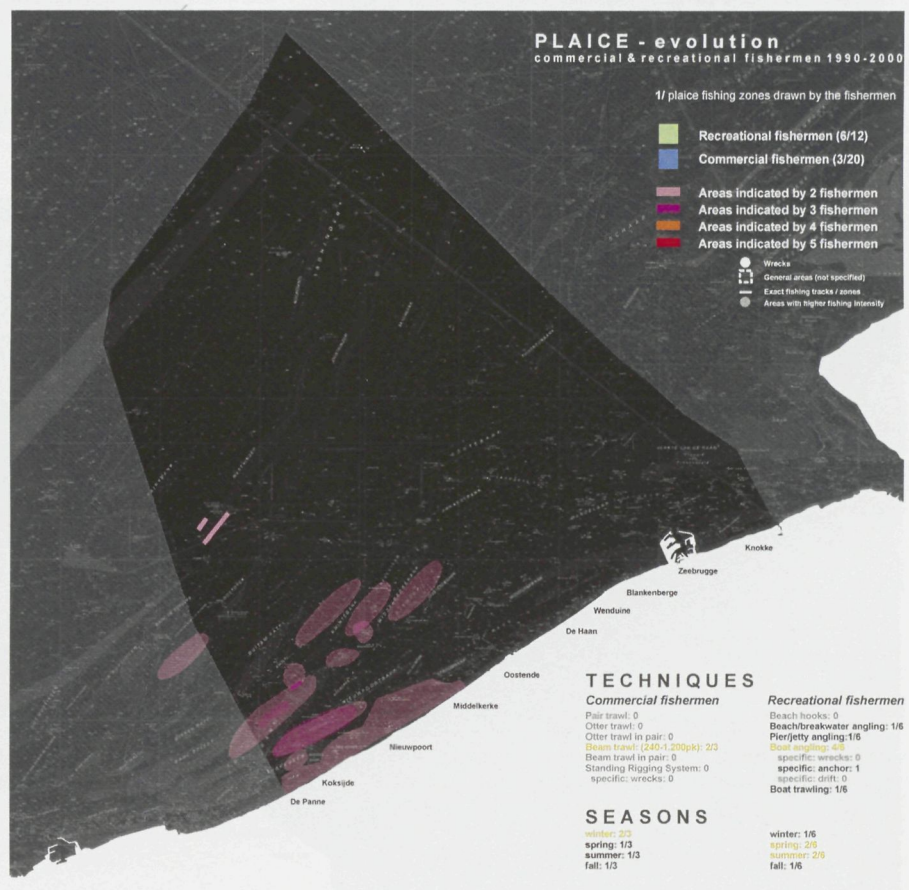
PLAICE - evolution

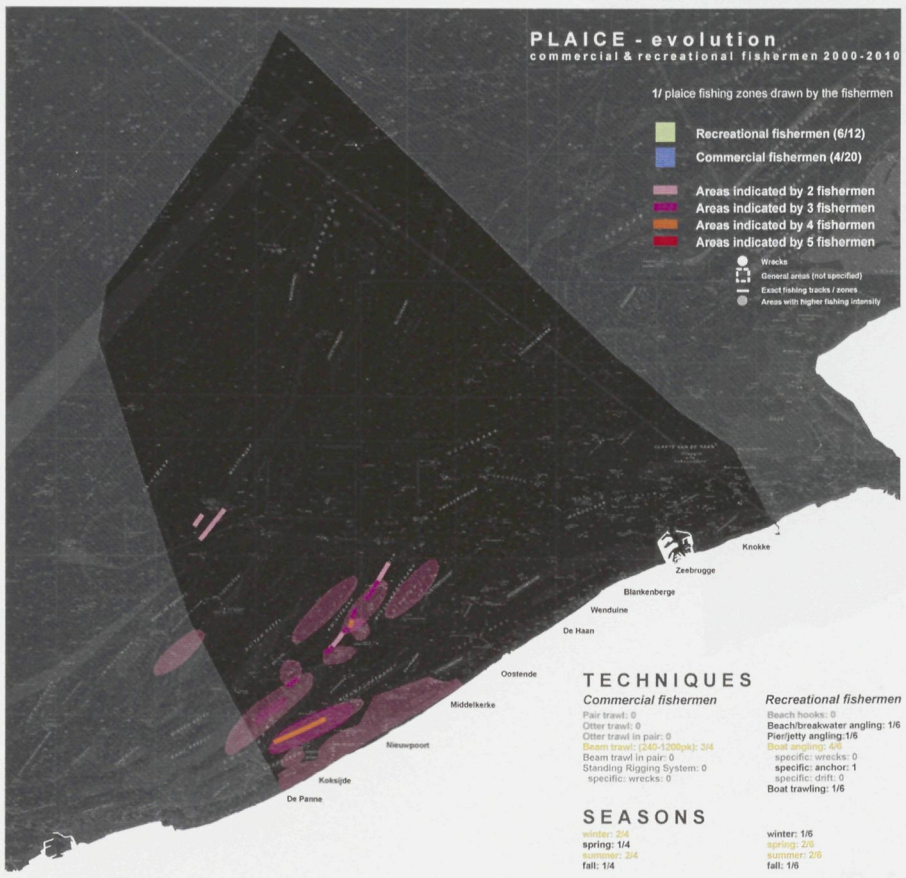
recreational & commercial fishermen 1960 - 2010







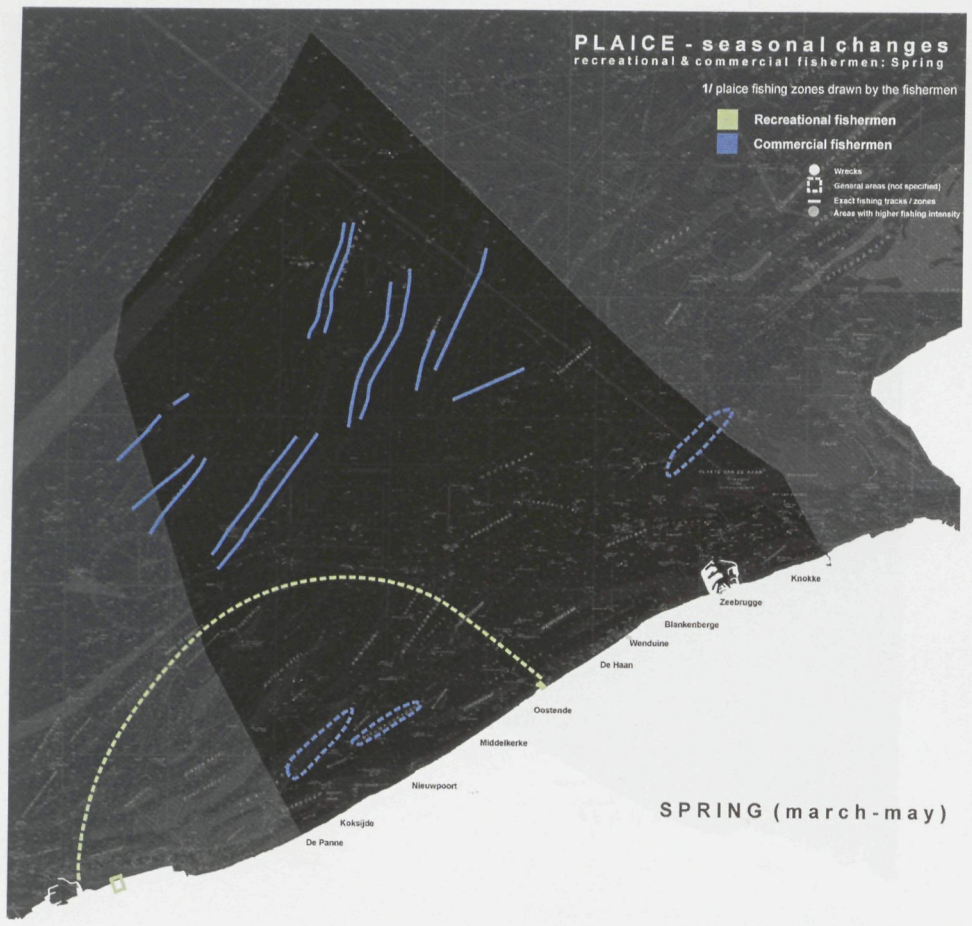


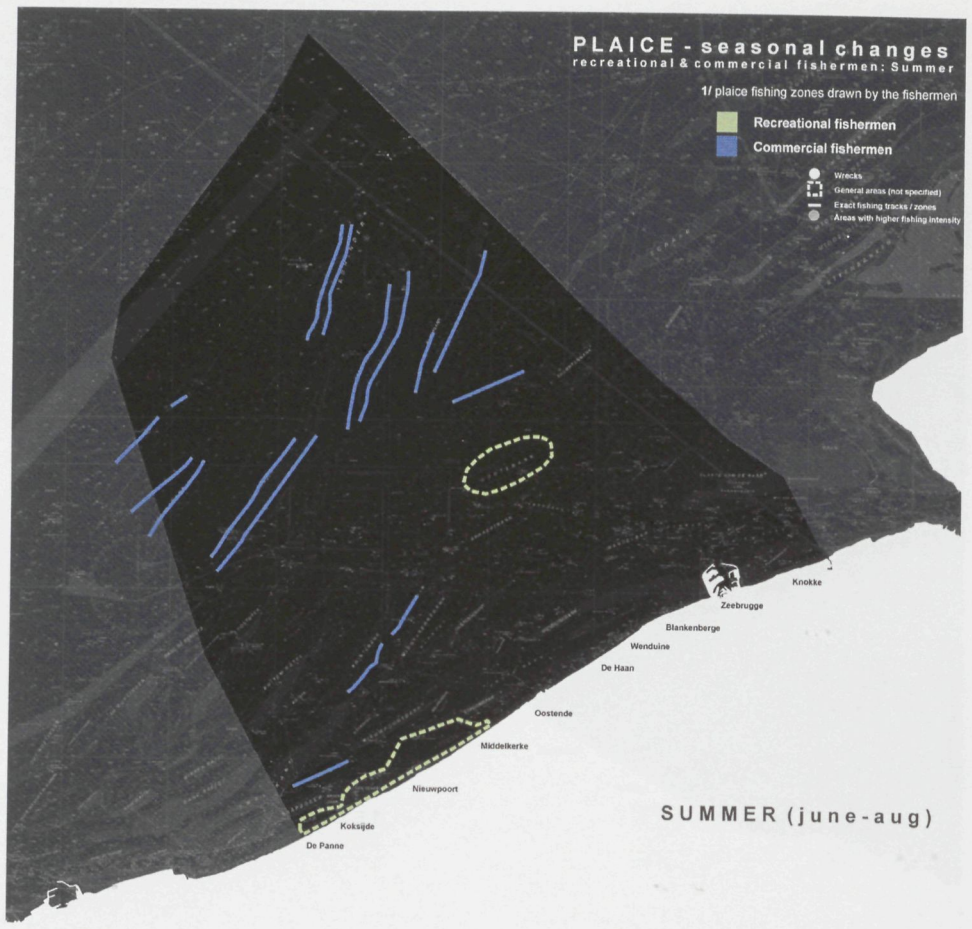


PLAICE - evolution

commercial & recreational fishermen 1960 - 2010

areas fished by 2 or more fishermen









PLAICE - seasonal changes
commercial & recreational fishermen 1950 - 2010



WINTER (jan)



WINTER (feb)



SPRING (march)



SPRING (april)



SPRING (may)



SUMMER (june)



SUMMER (july)



SUMMER (august)



AUTUMN (sept)



AUTUMN (oct)



AUTUMN (nov)

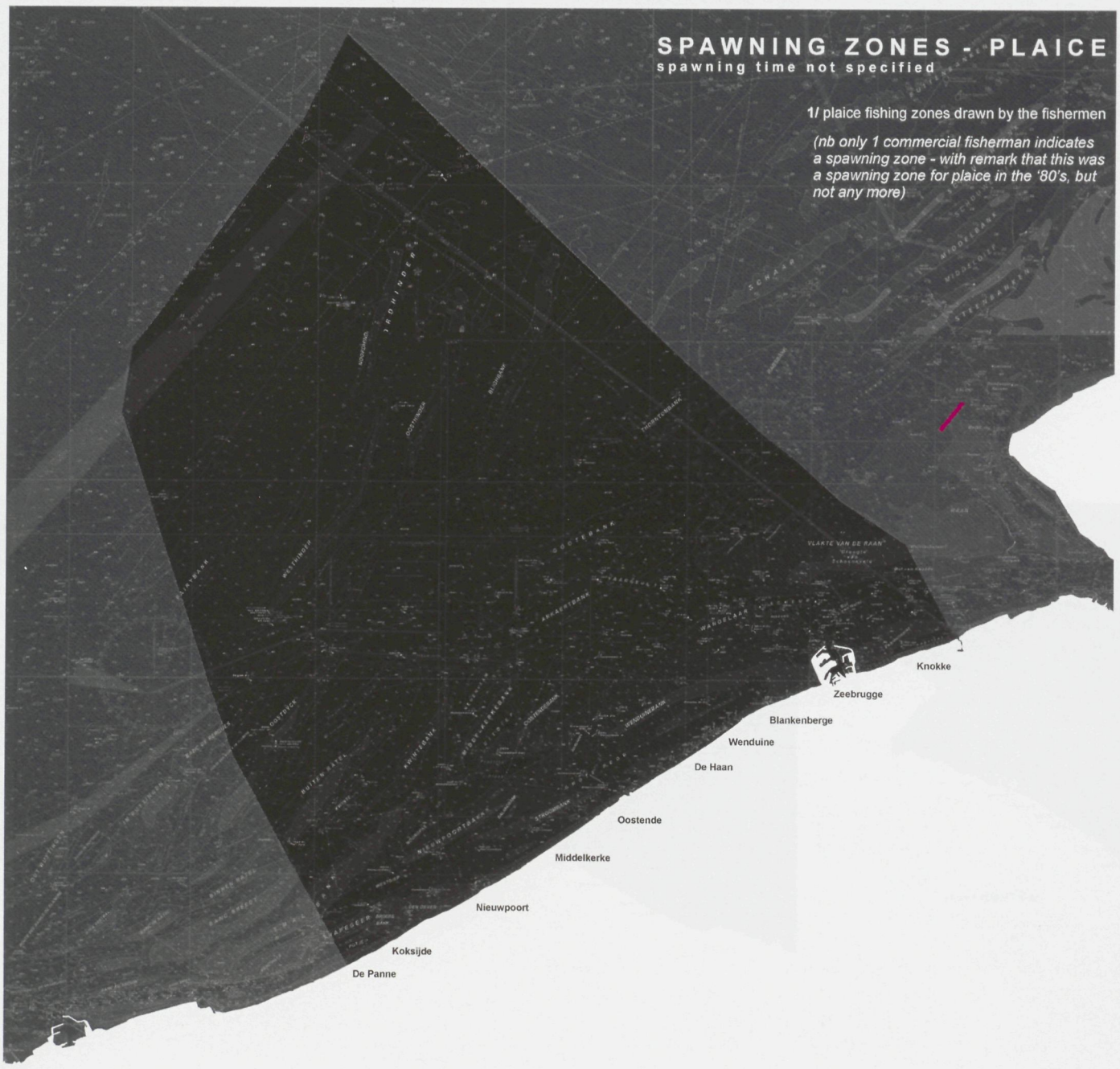


WINTER (dec)

PLAICE - seasonal changes january-december

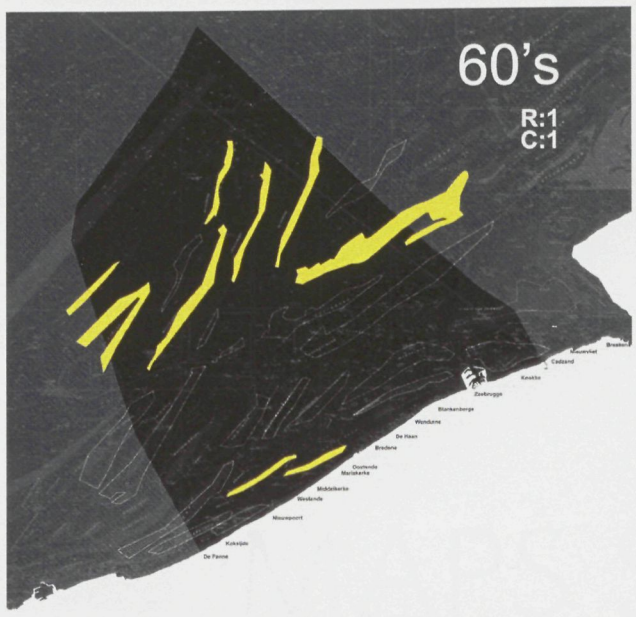
commercial & recreational fishermen 1950 - 2010

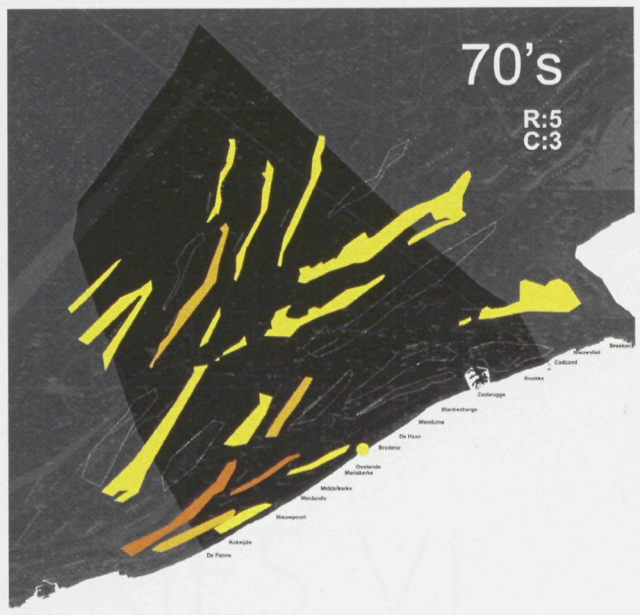


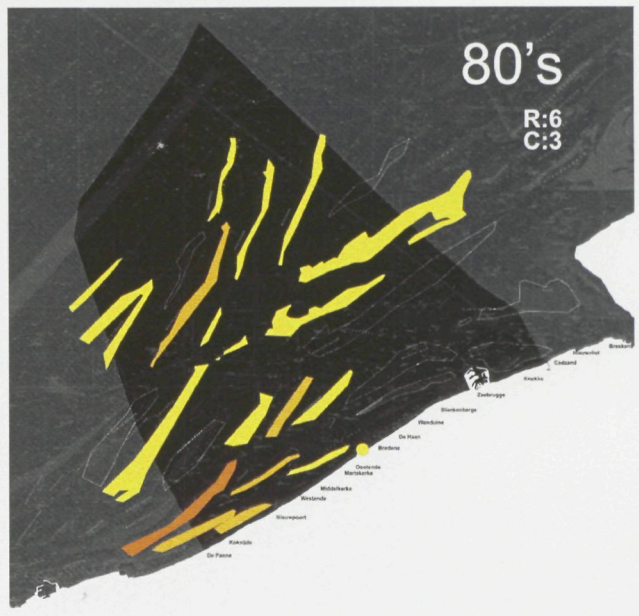


PLAICE - other locations & spawning zones

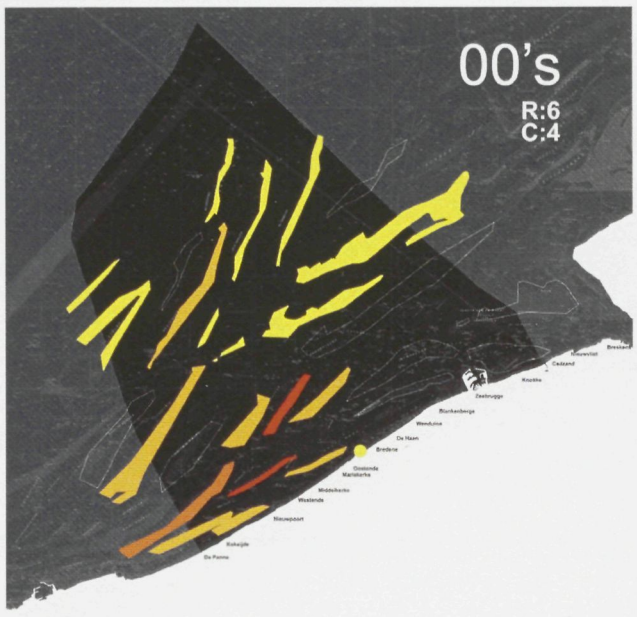
commercial & recreational fishermen 1950 - 2010











PLAICE - EVOLUTION OF FISHING ZONES

commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011









PLAICE - SEASONAL CHANGES

commercial & recreational fishermen 1960-2010

banks / beach / ports indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011

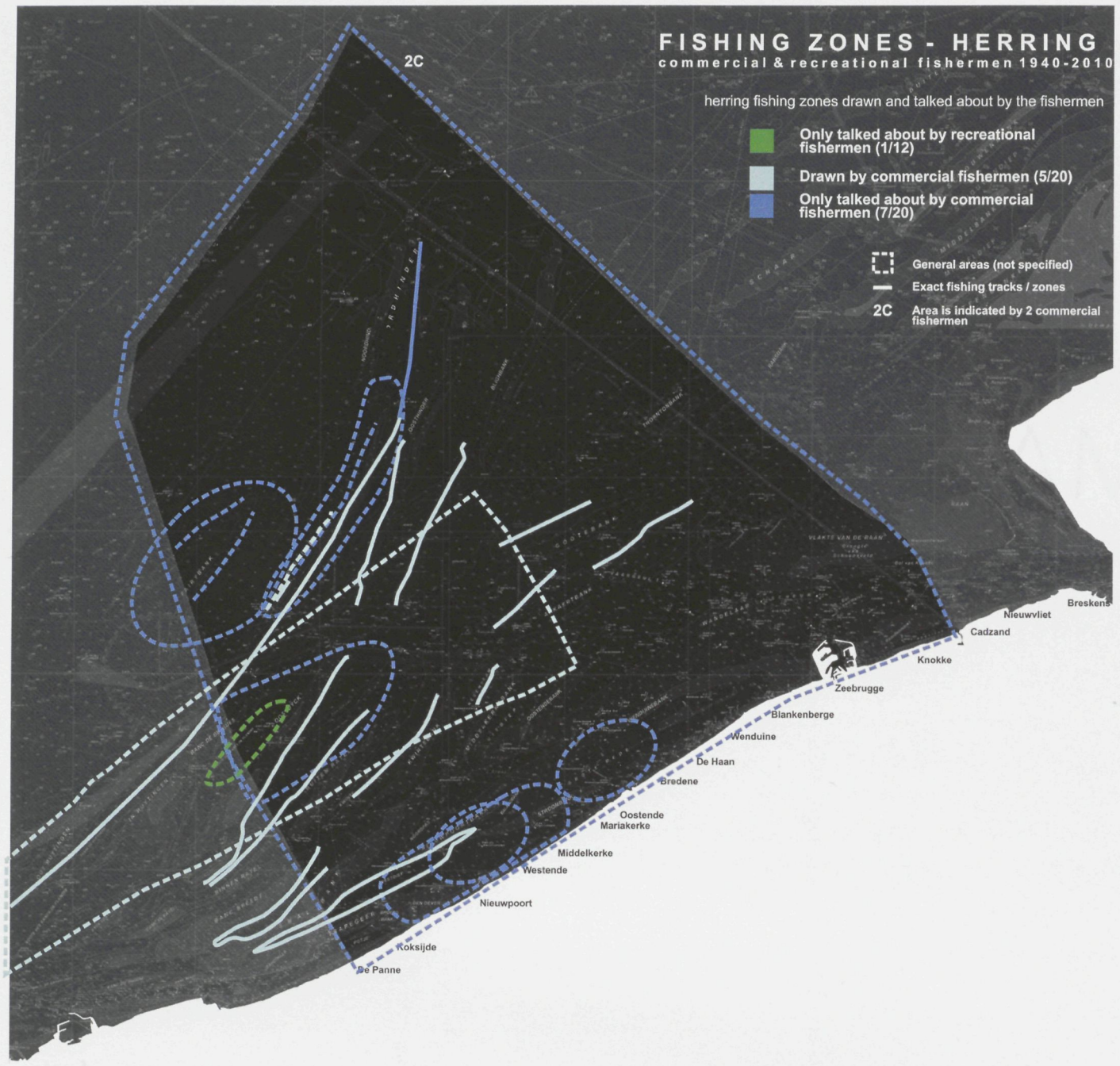
PLAICE - structure maps

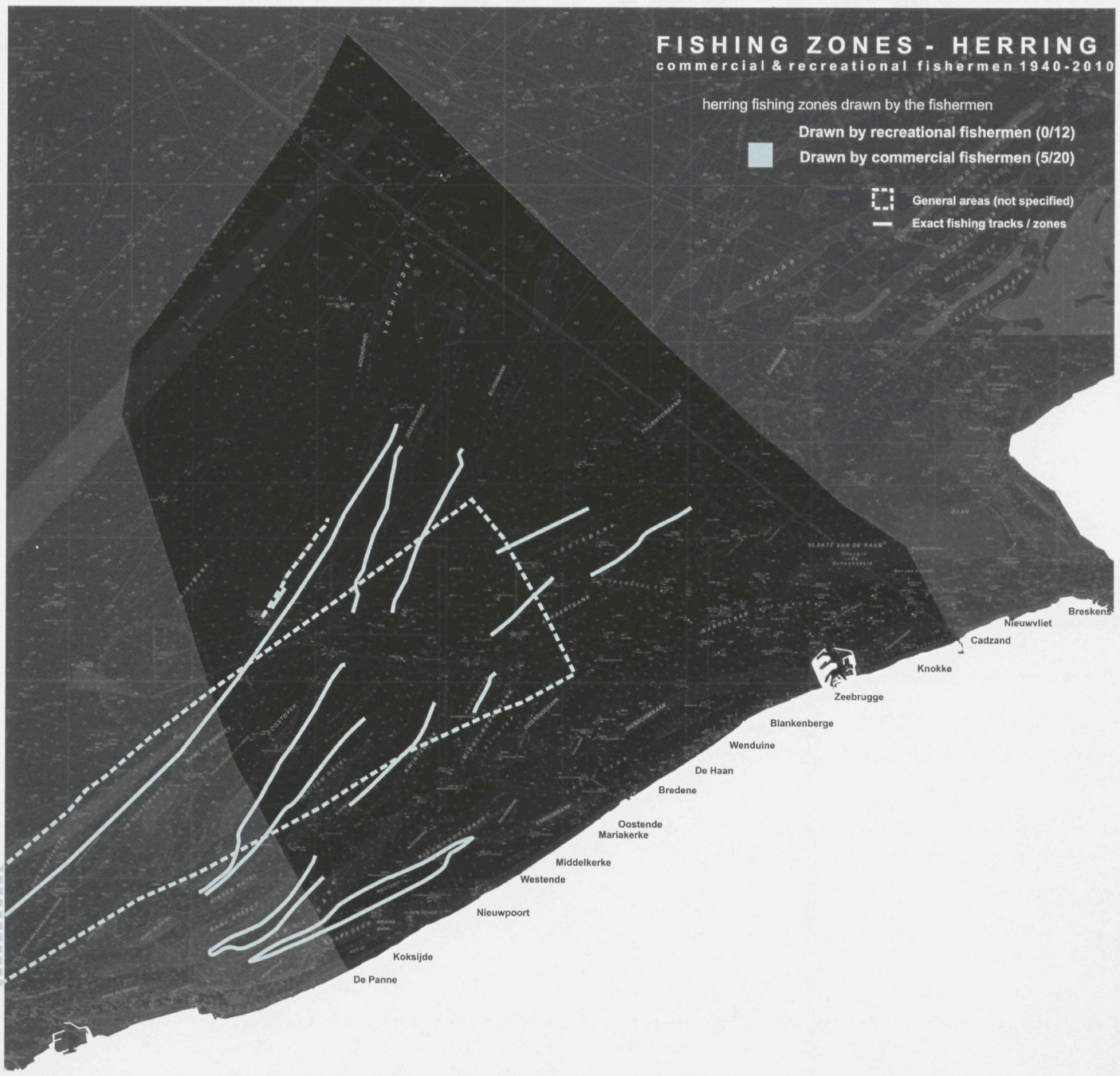
commercial & recreational fishermen 1950 - 2010

MAPS SERIES VI

HERRING







HERRING - fishing zones drawn and talked about

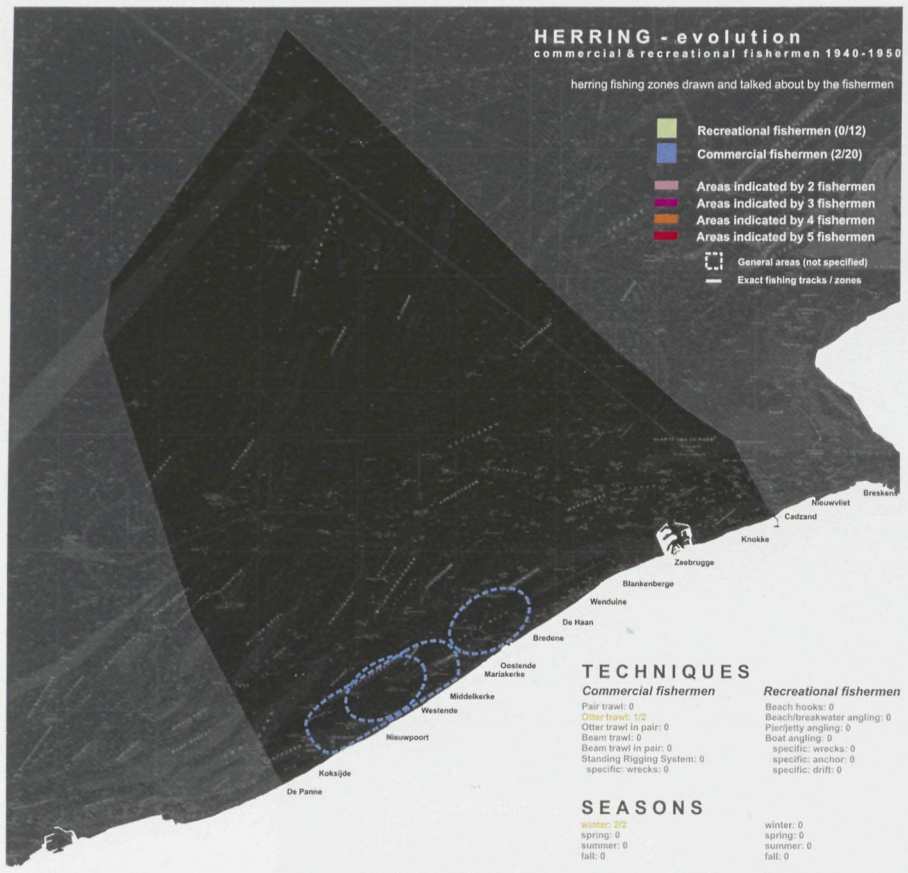
commercial & recreational fishermen 1940 - 2010

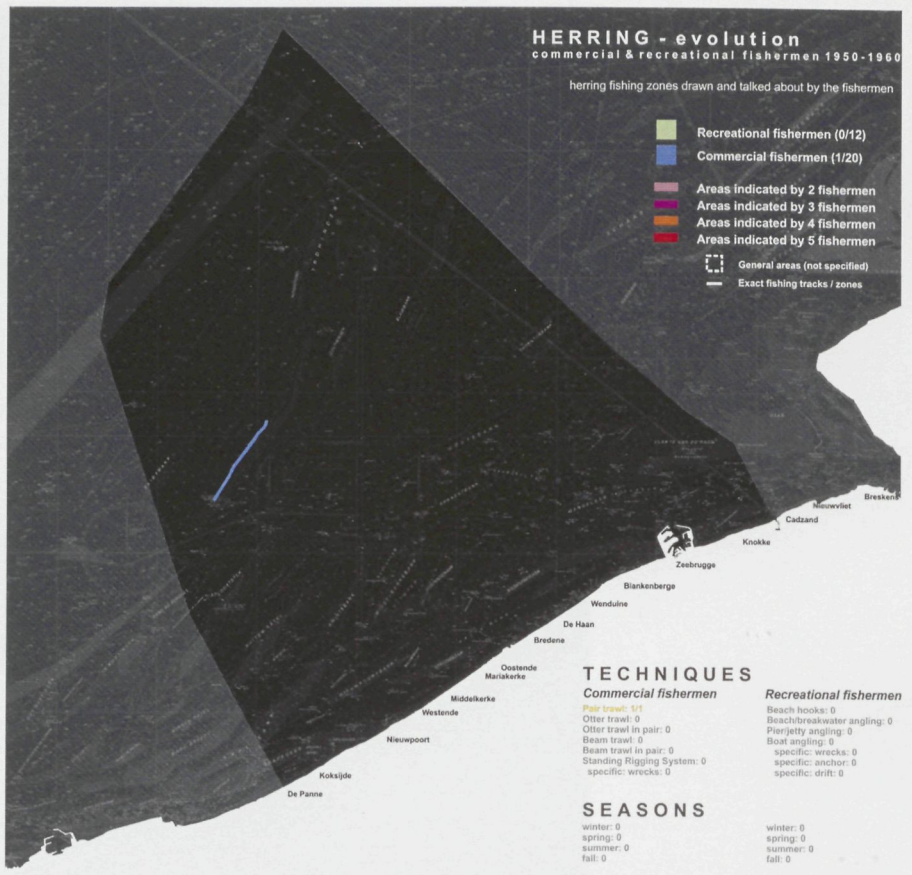


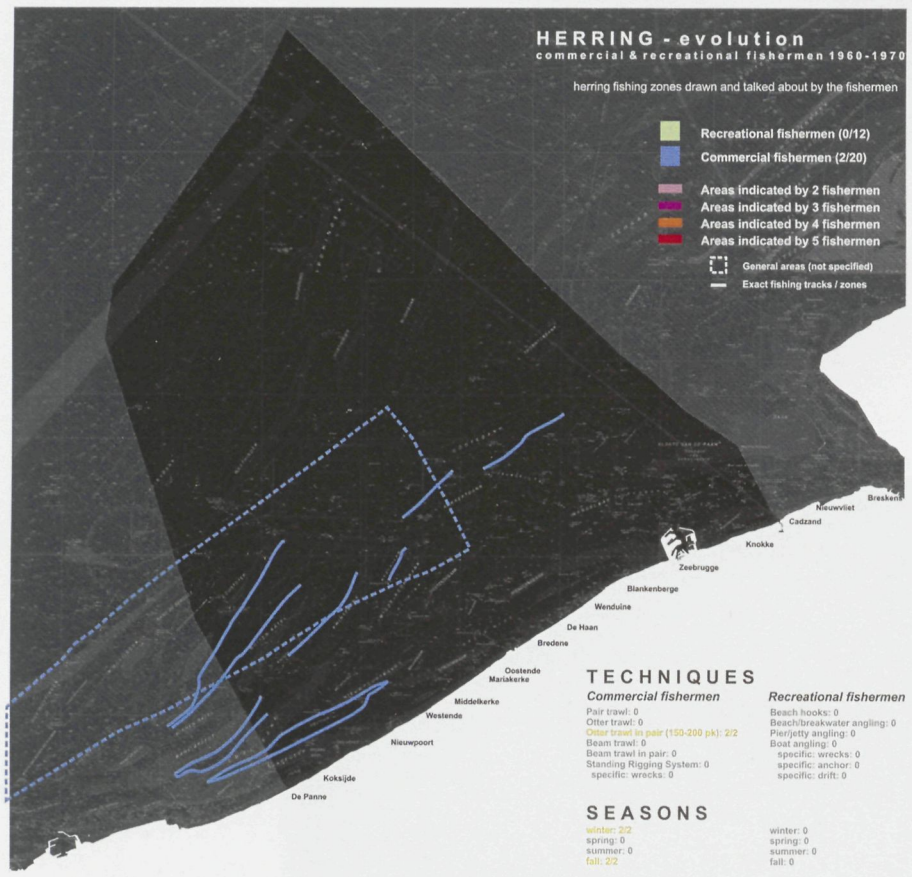


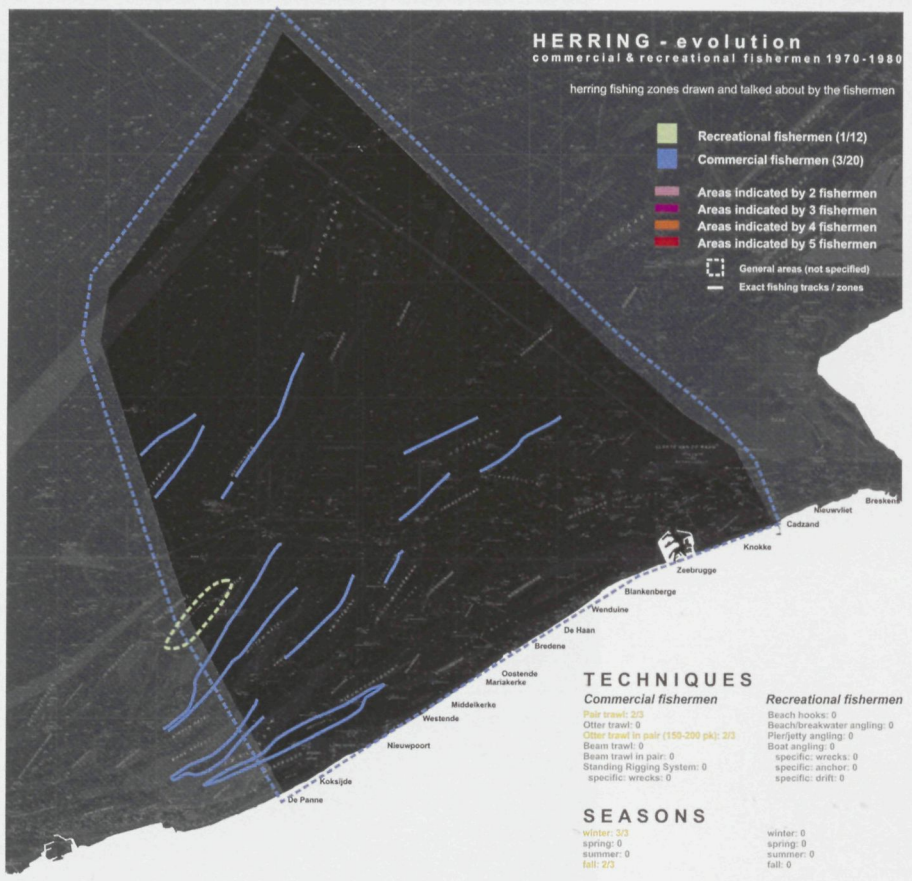
HERRING - fishing zones

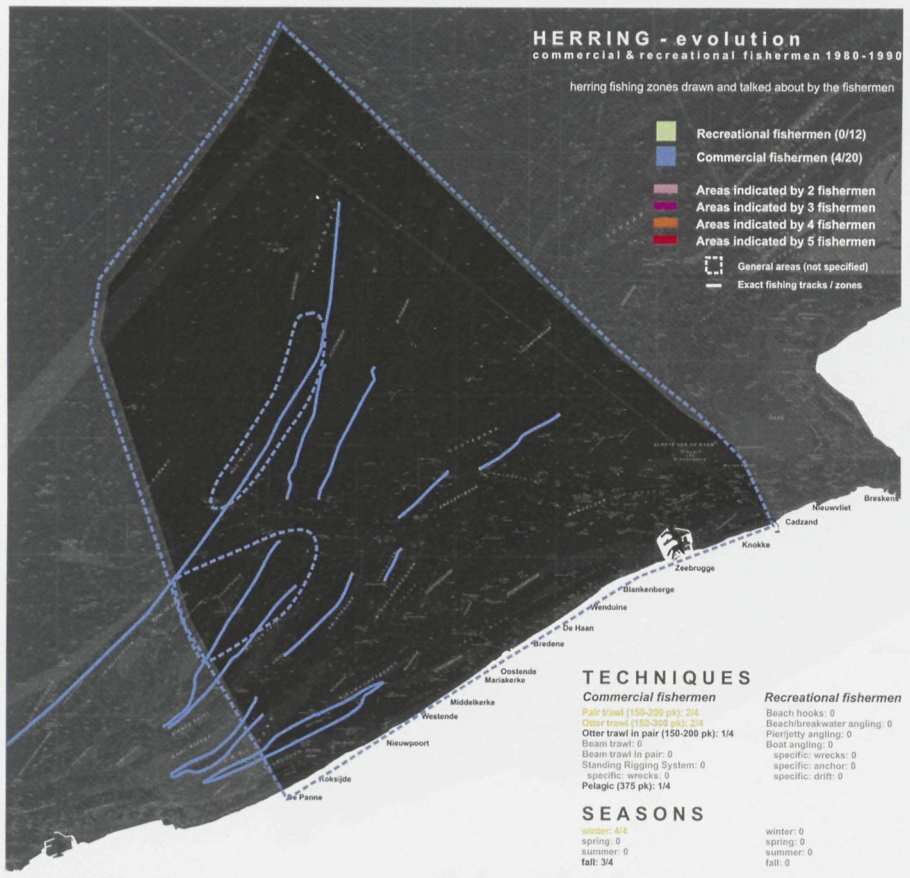
commercial & recreational fishermen 1940 - 2010

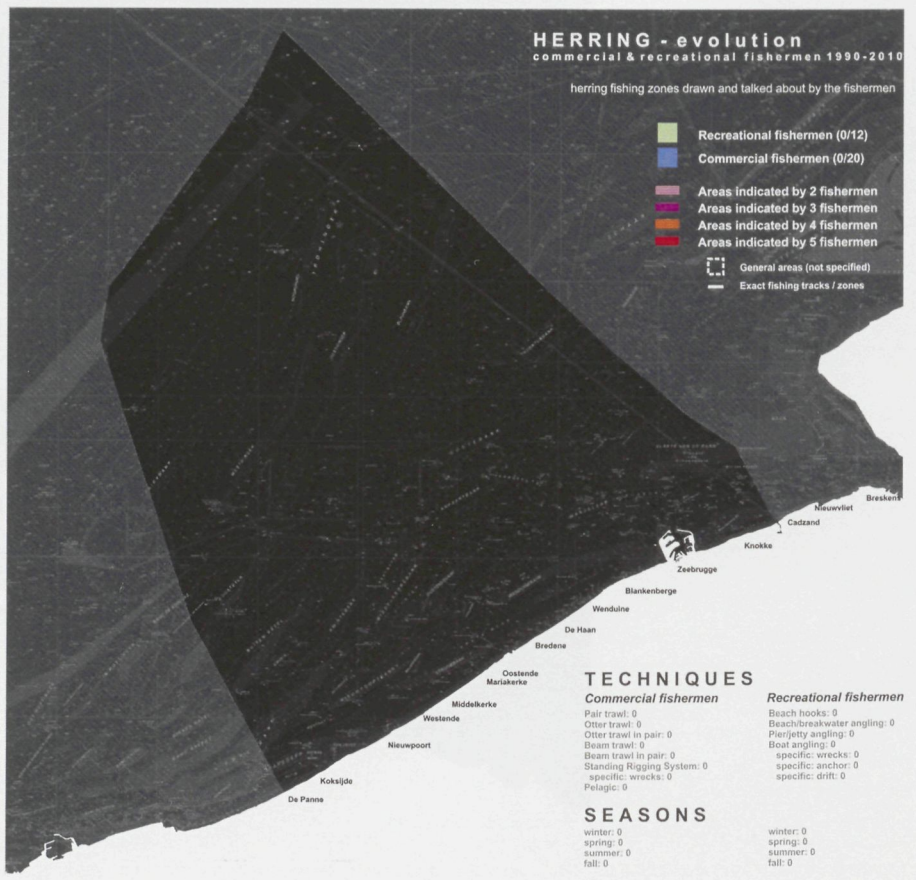






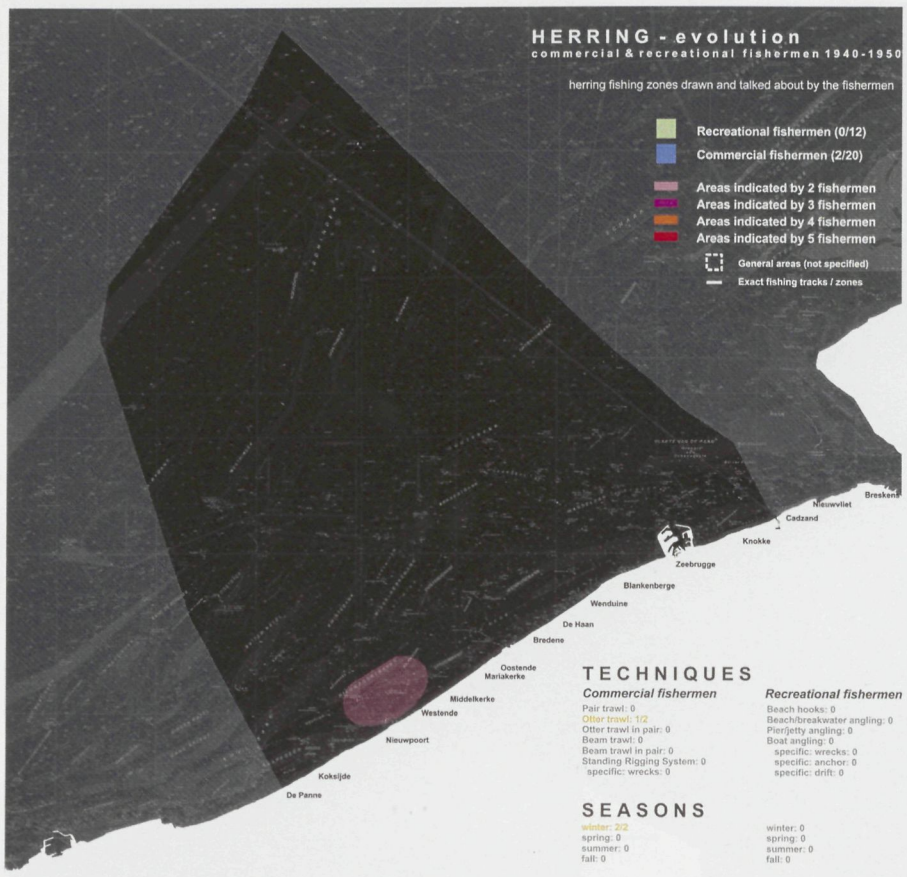


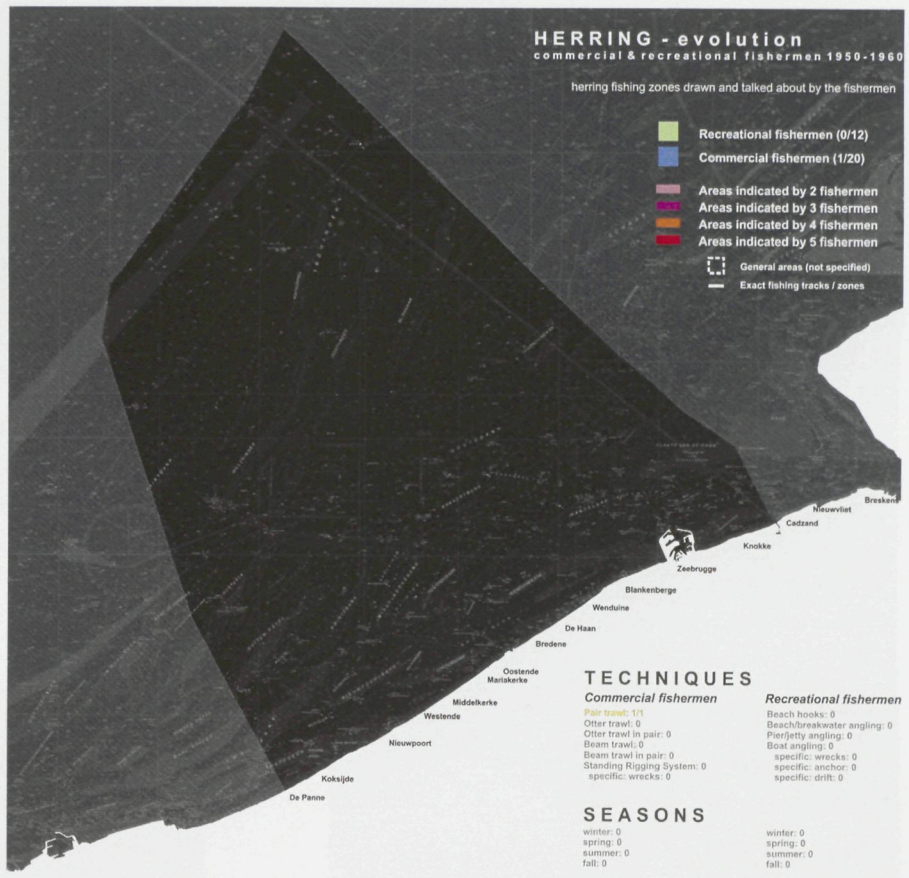


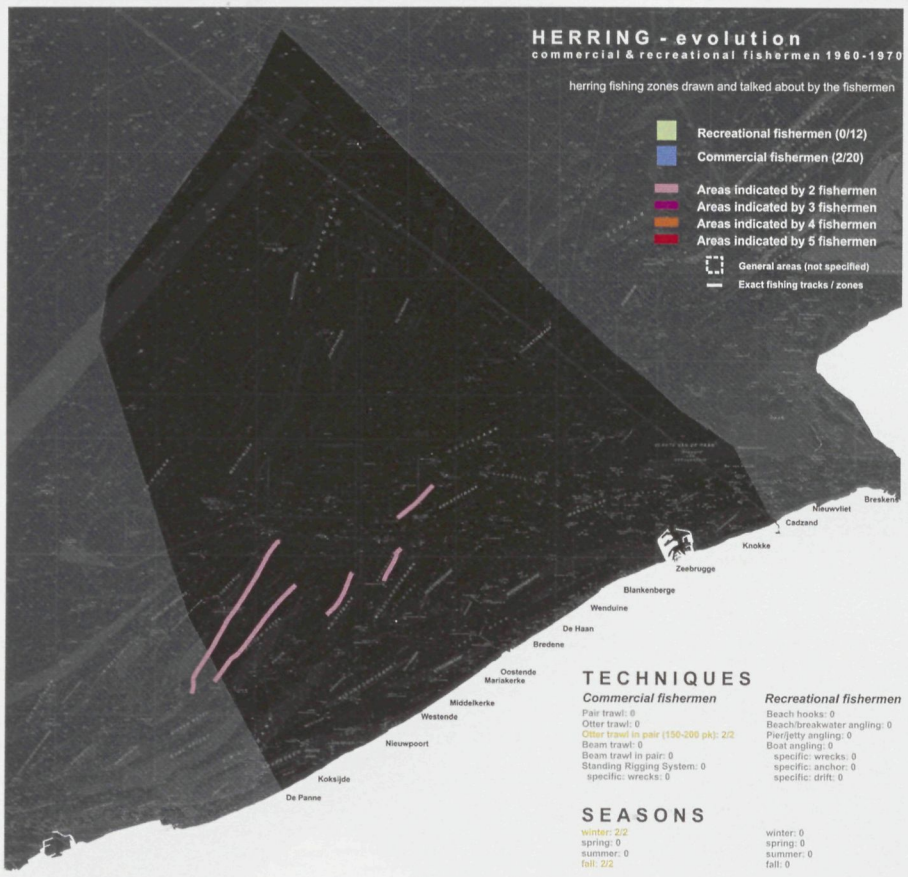


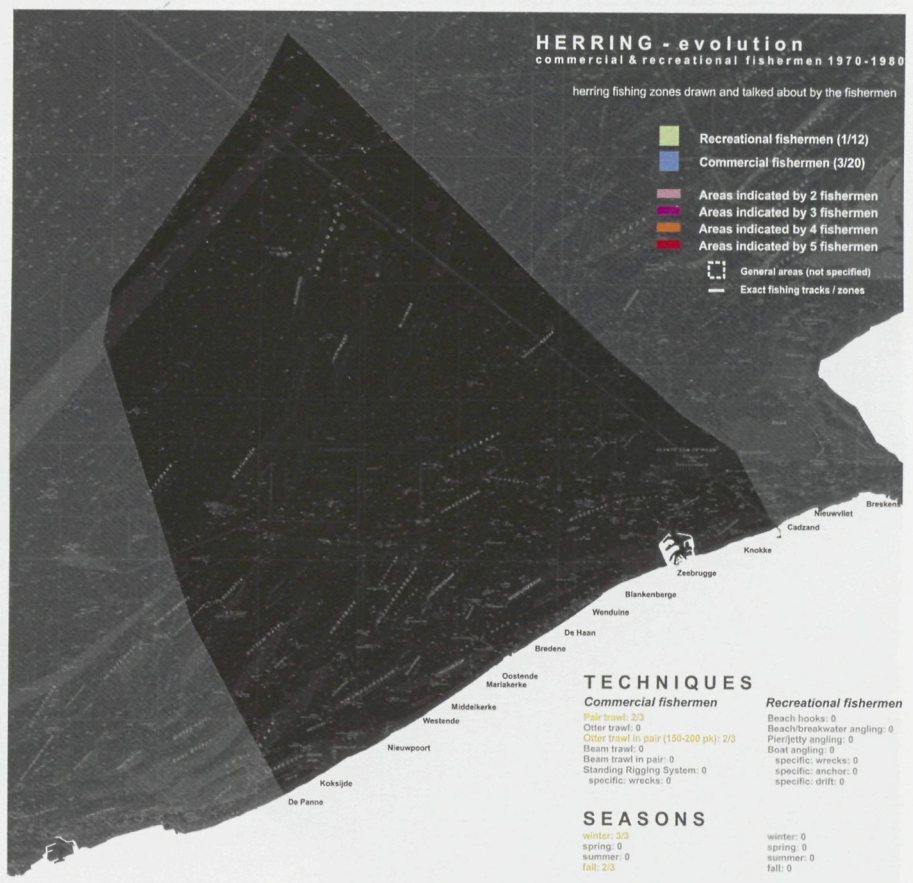
HERRING - evolution

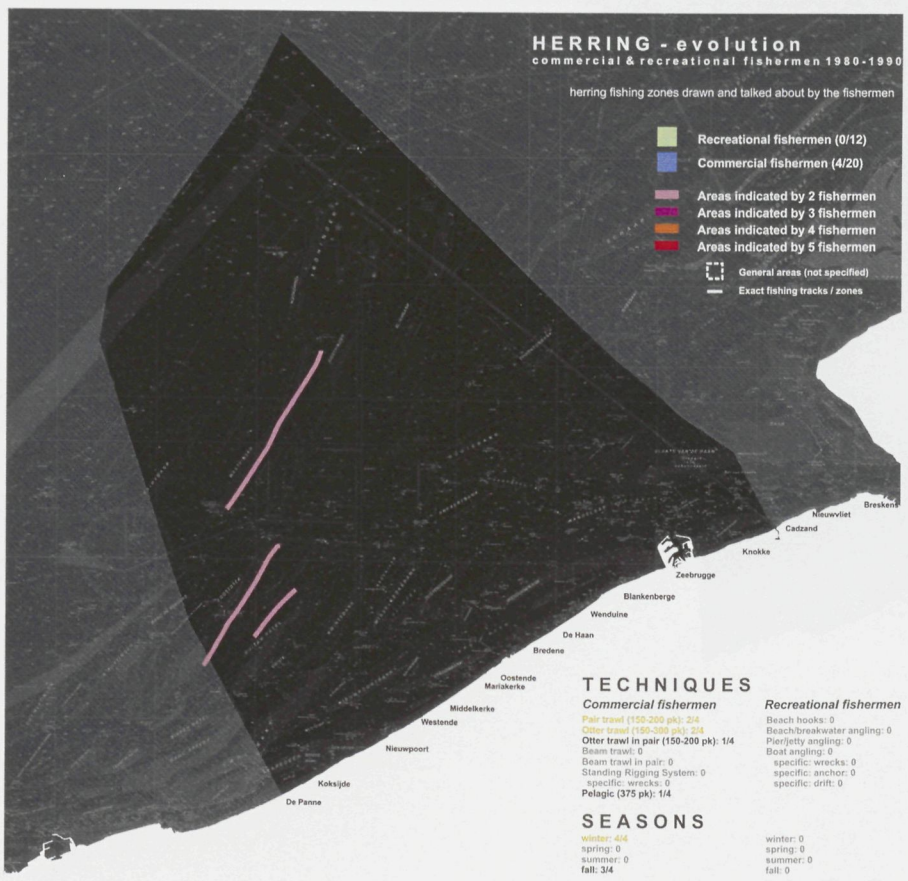
recreational & commercial fishermen 1940 - 2010

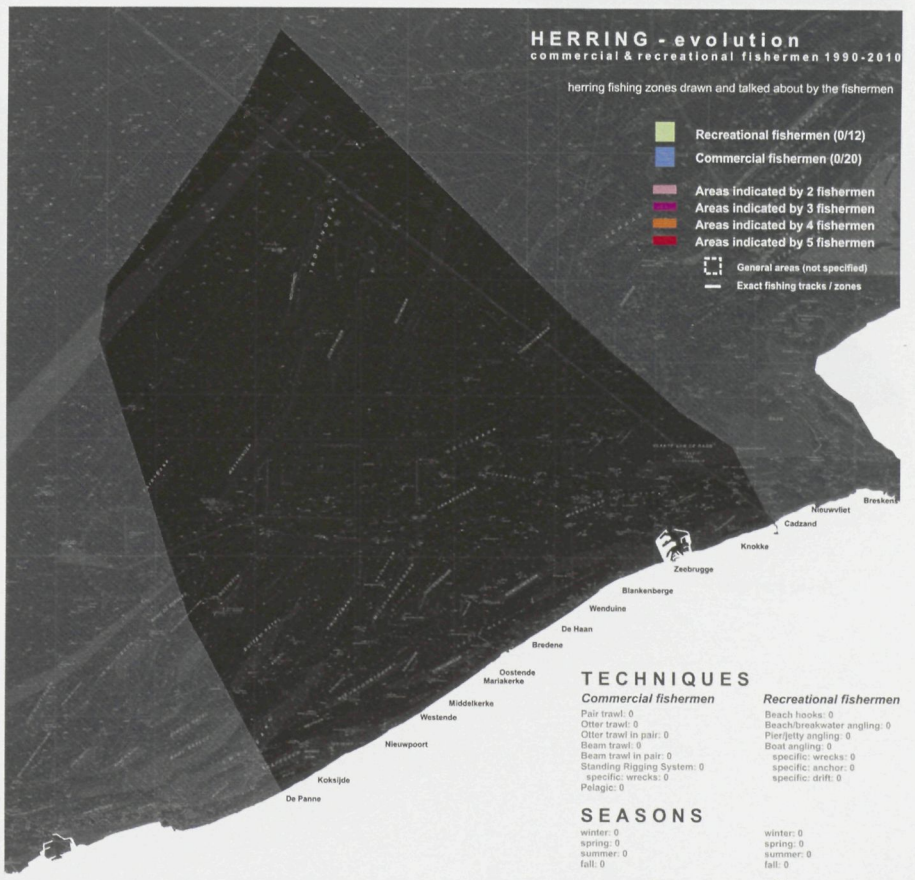








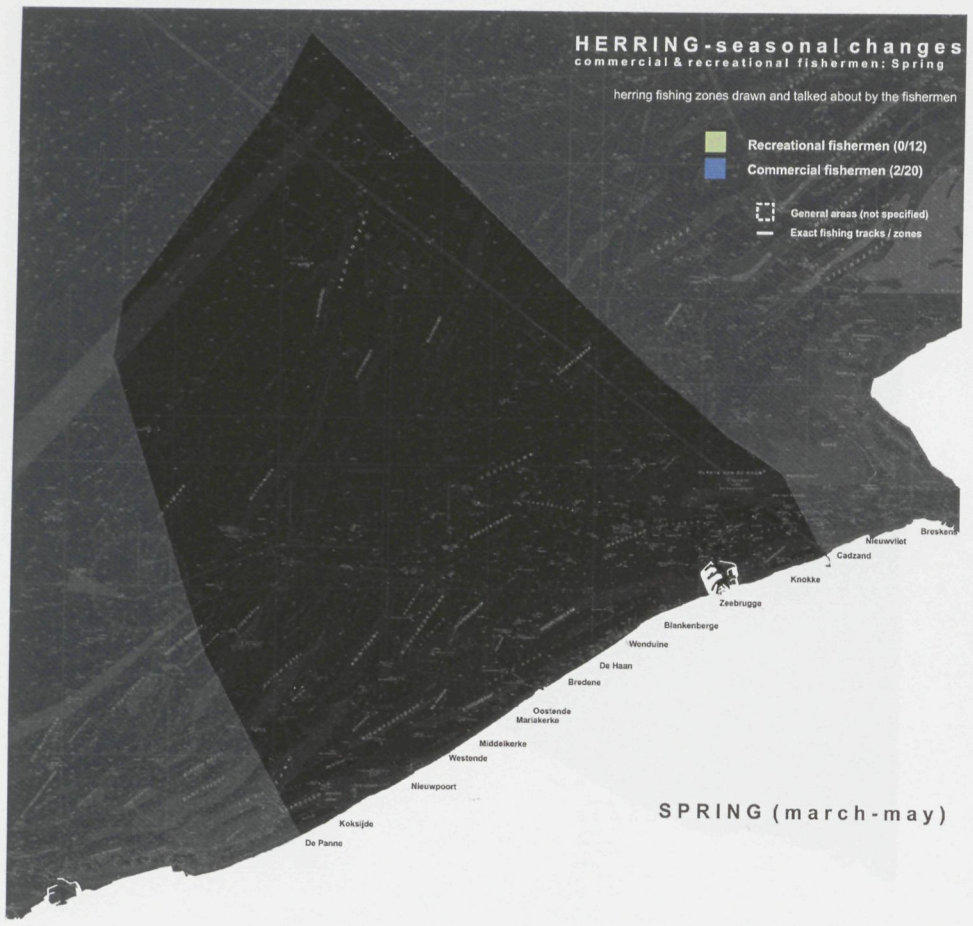


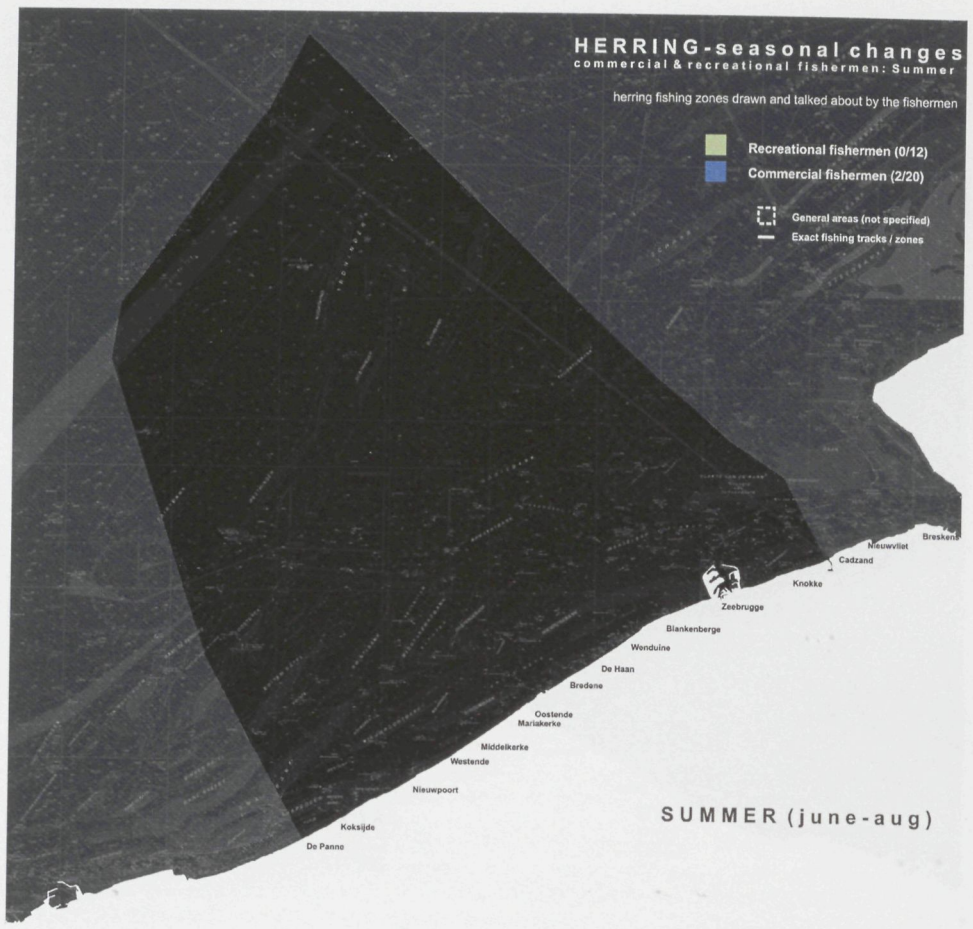


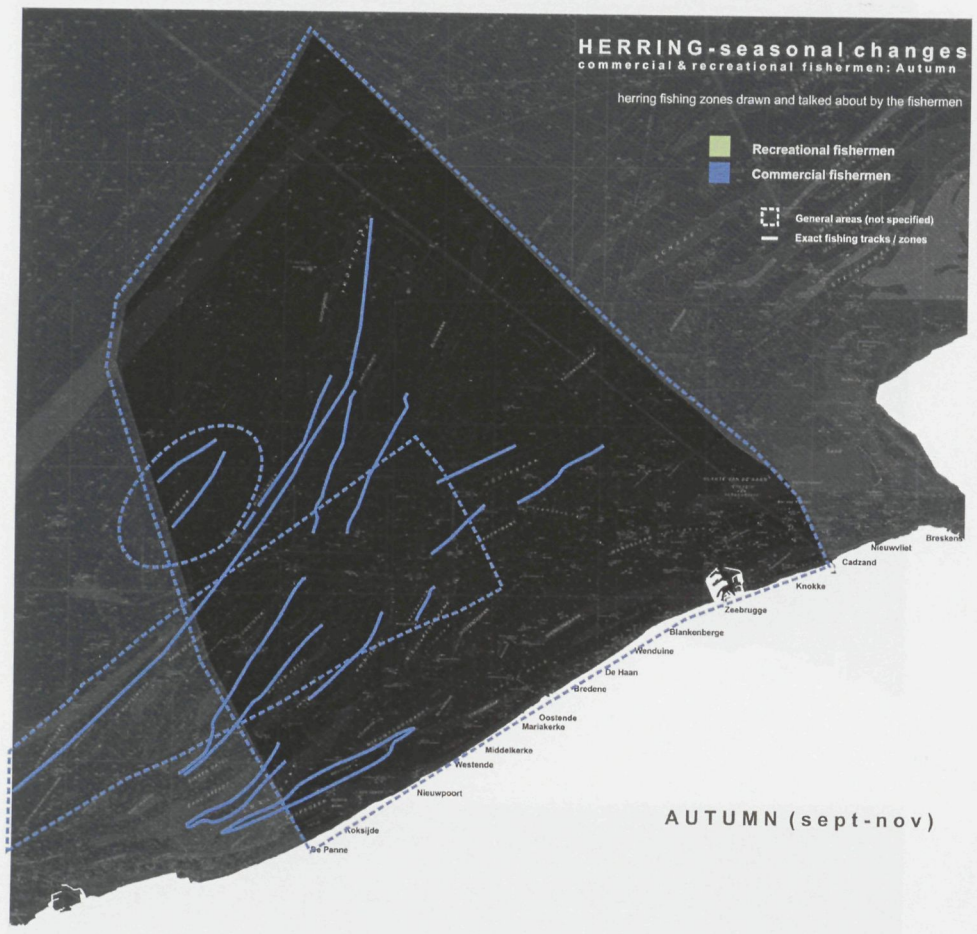
HERRING - evolution

commercial & recreational fishermen 1940 - 2010

areas fished by 2 or more fishermen



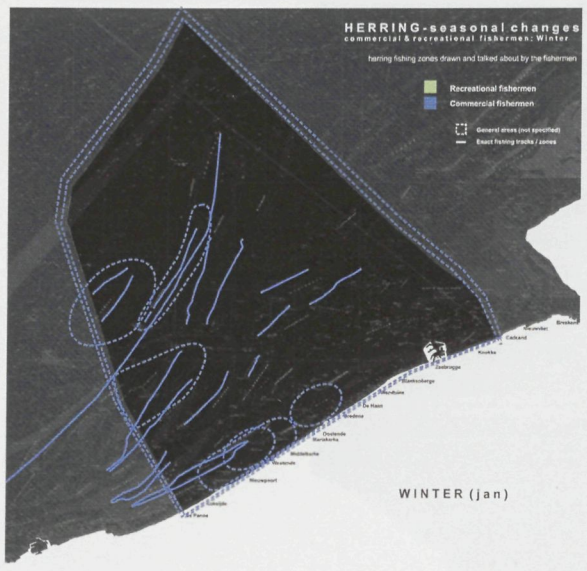




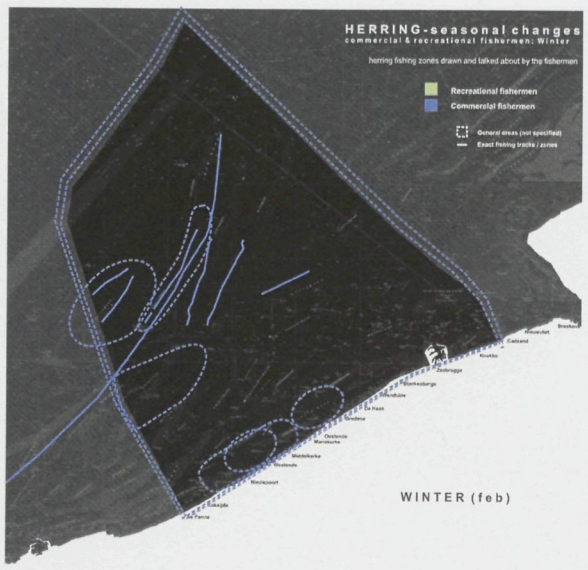


HERRING - seasonal changes

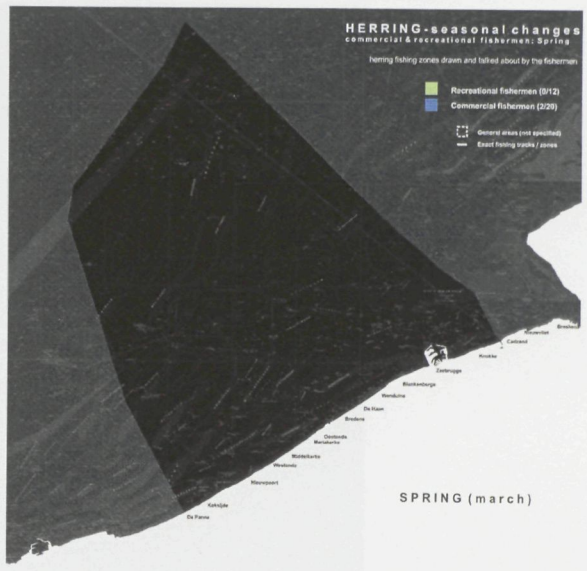
commercial & recreational fishermen 1940 - 2010



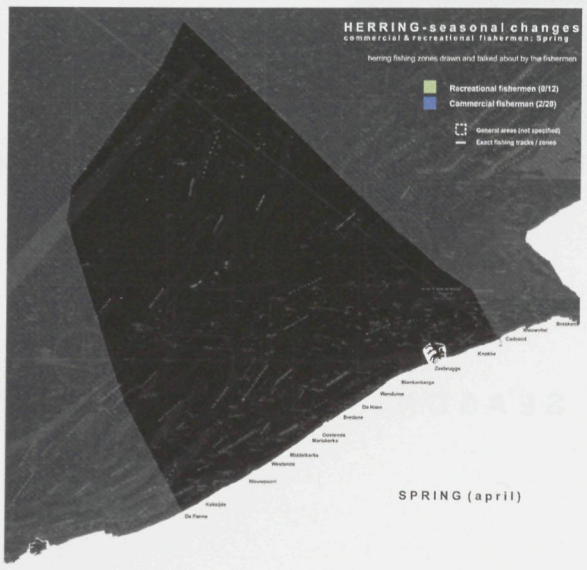
WINTER (jan)



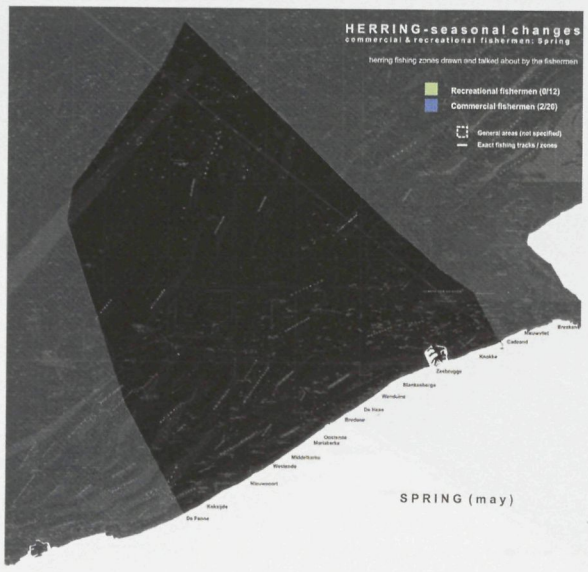
WINTER (feb)



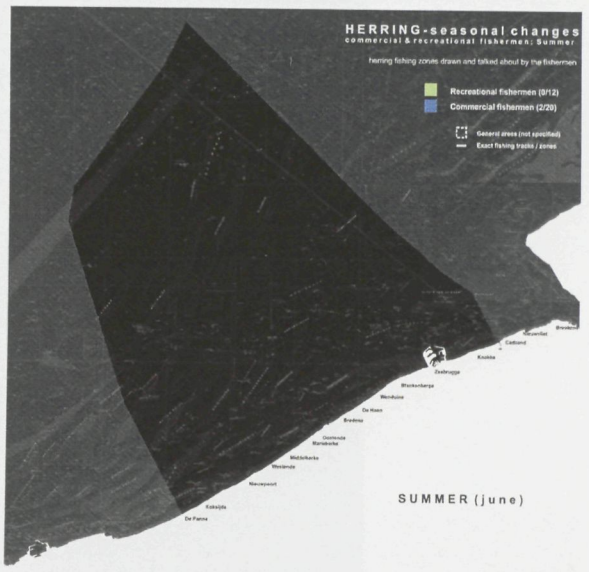
SPRING (march)



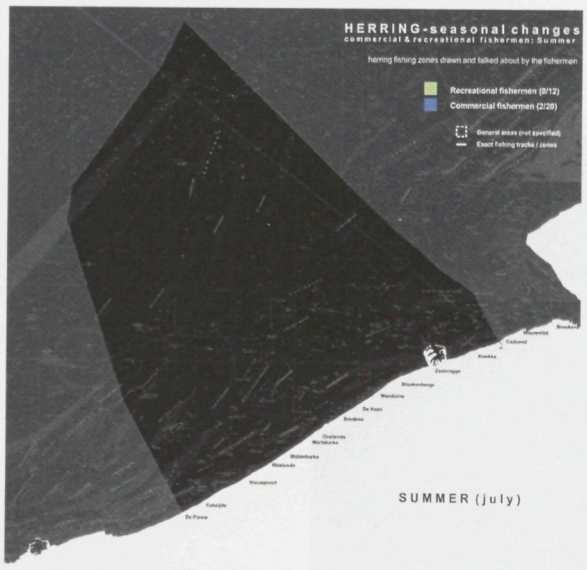
SPRING (april)



SPRING (may)



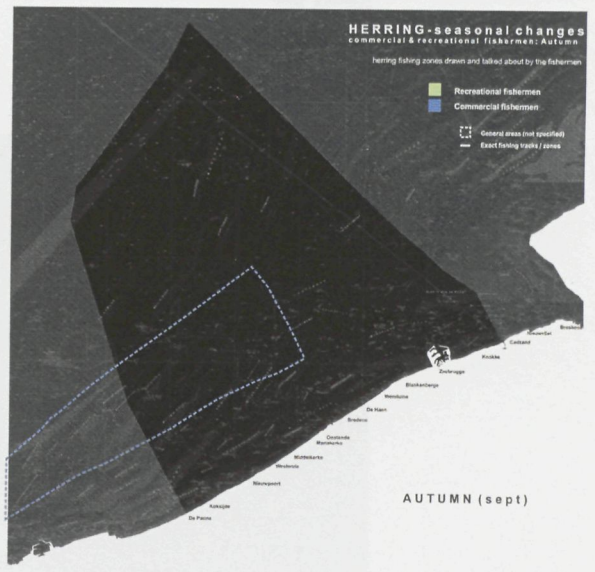
SUMMER (june)



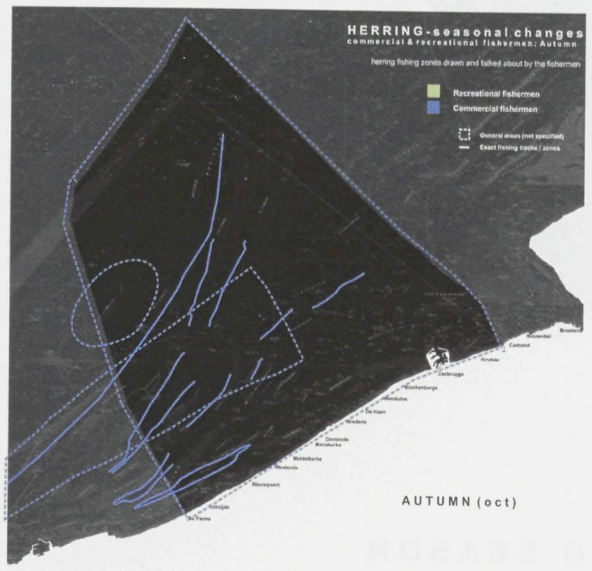
SUMMER (july)



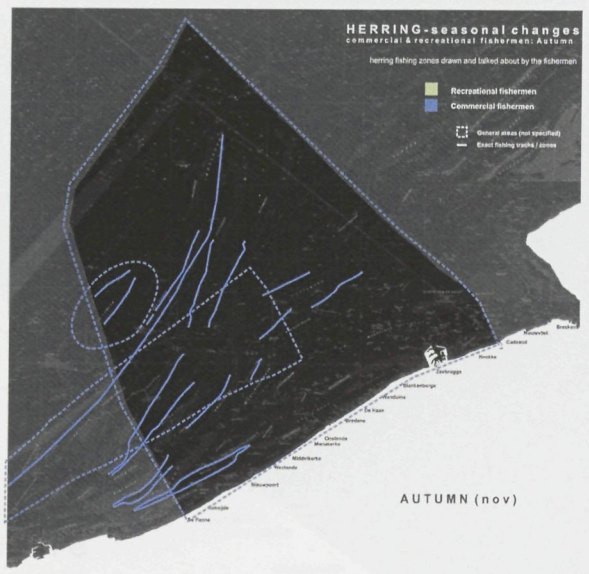
SUMMER (august)



AUTUMN (sept)



AUTUMN (oct)



AUTUMN (nov)



WINTER (dec)

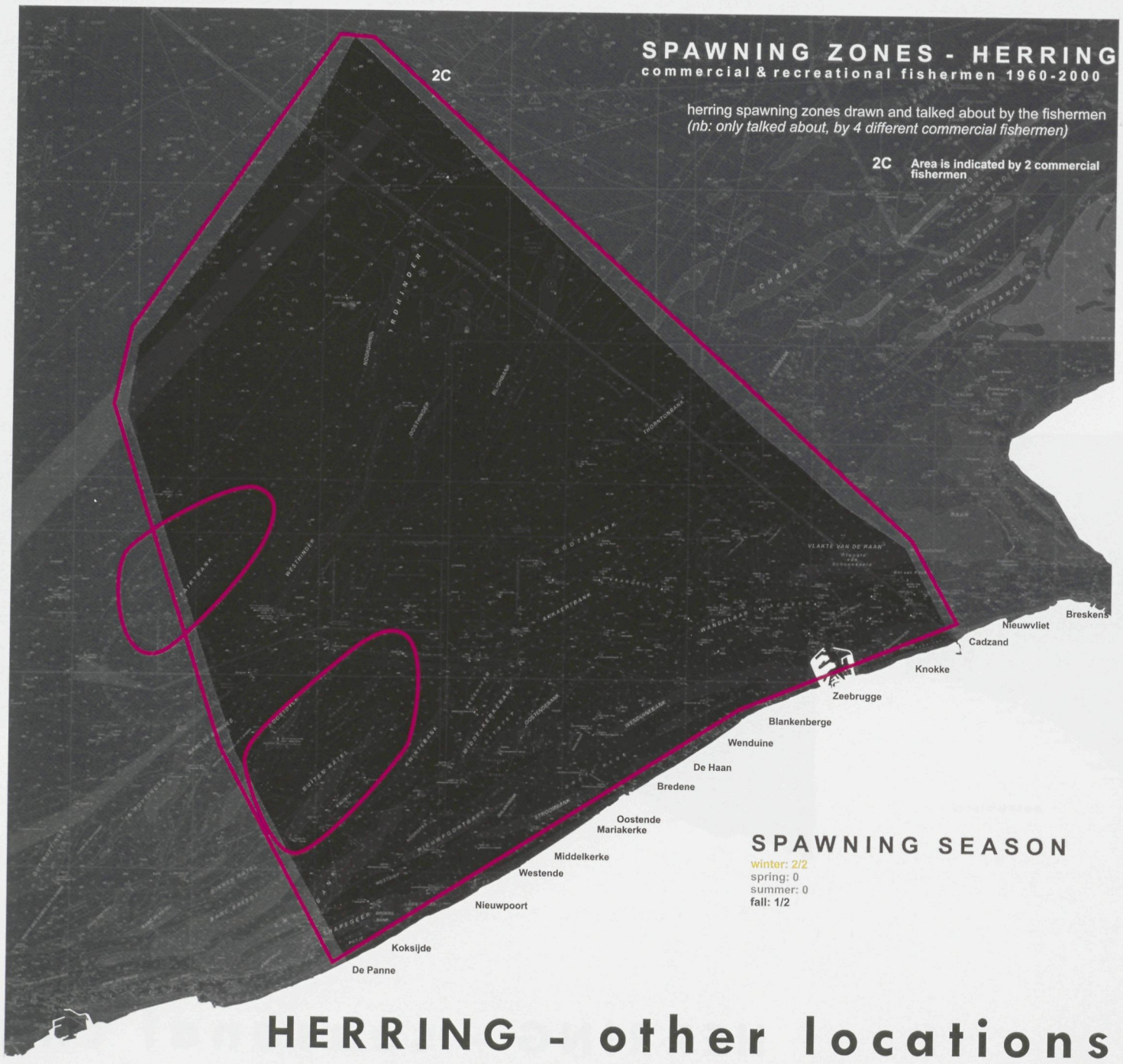
HERRING - seasonal changes january-december

commercial & recreational fishermen 1940 - 2010



HERRING SEASON

winter: 5/6
spring: 2/6
summer: 1/6
fall: 1/6



SPAWNING SEASON

winter: 2/2
spring: 0
summer: 0
fall: 1/2

HERRING - other locations & spawning zones

commercial & recreational fishermen 1940 - 2010

MAPS SERIES VII

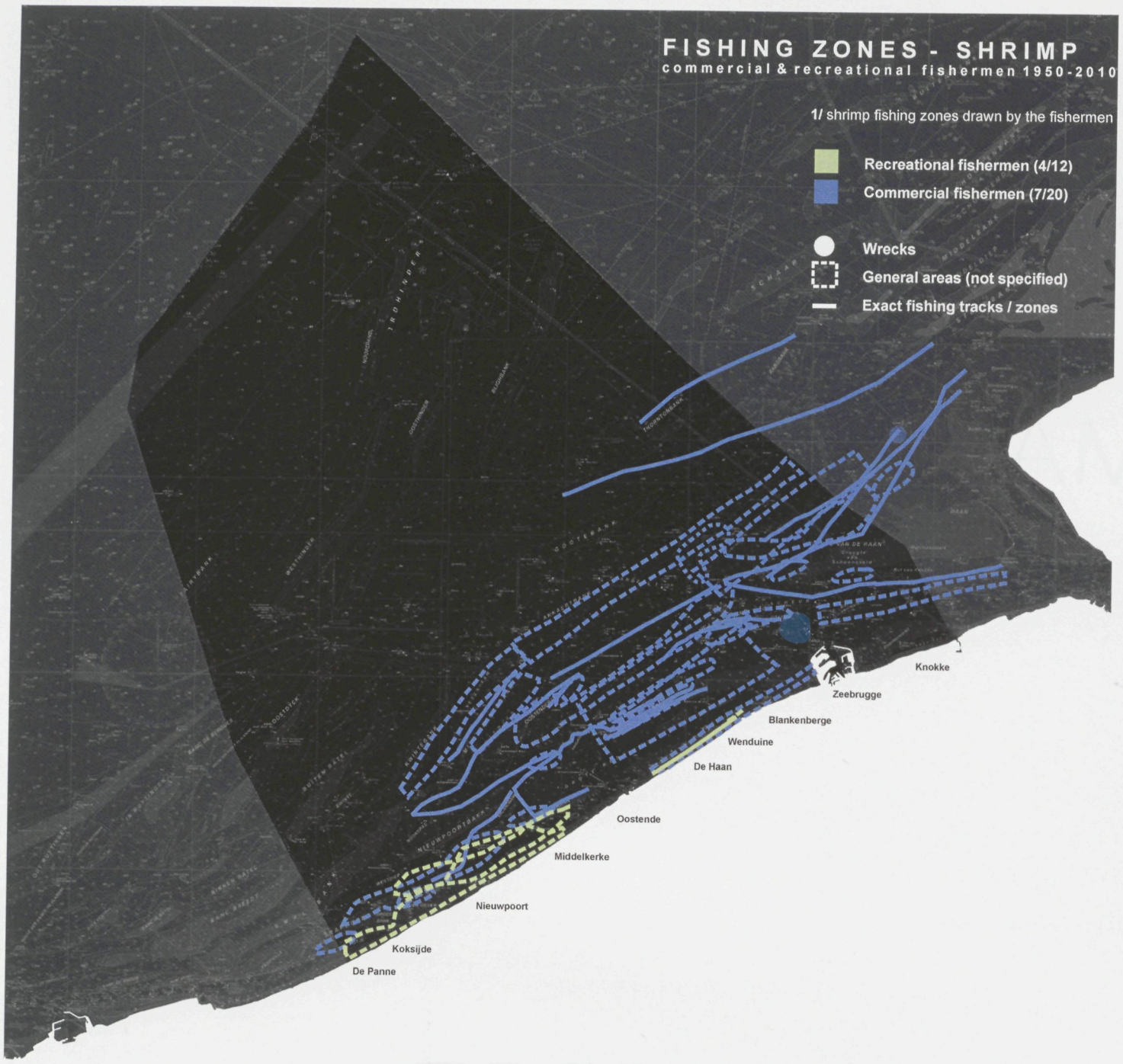
SHRINAT

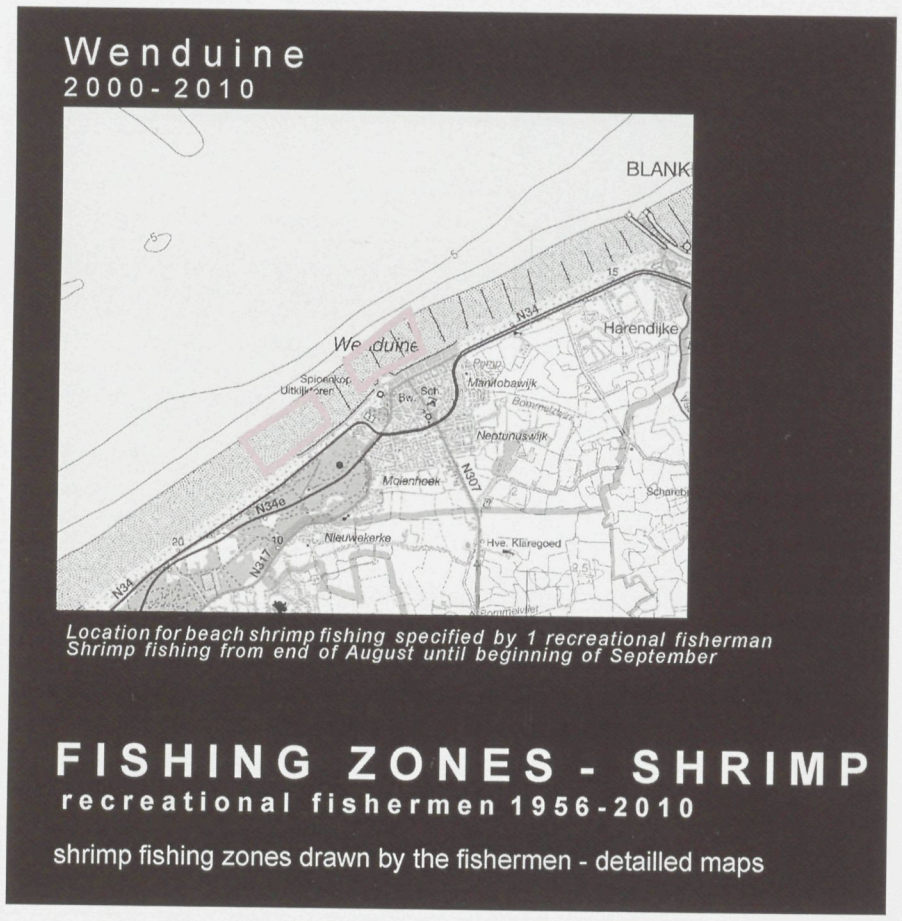


MAPS SERIES VII

SHRIMP



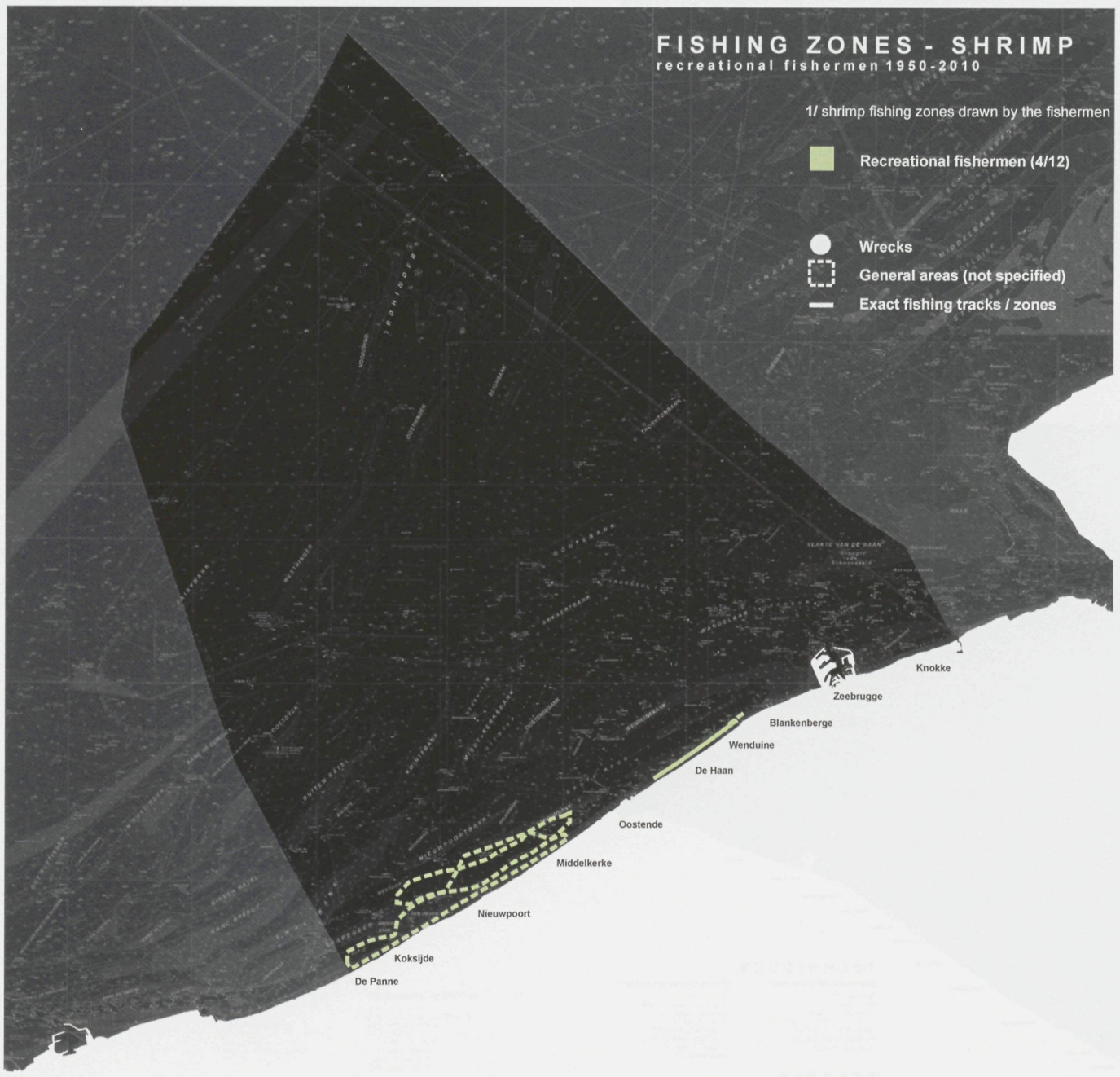




SHRIMP - fishing zones

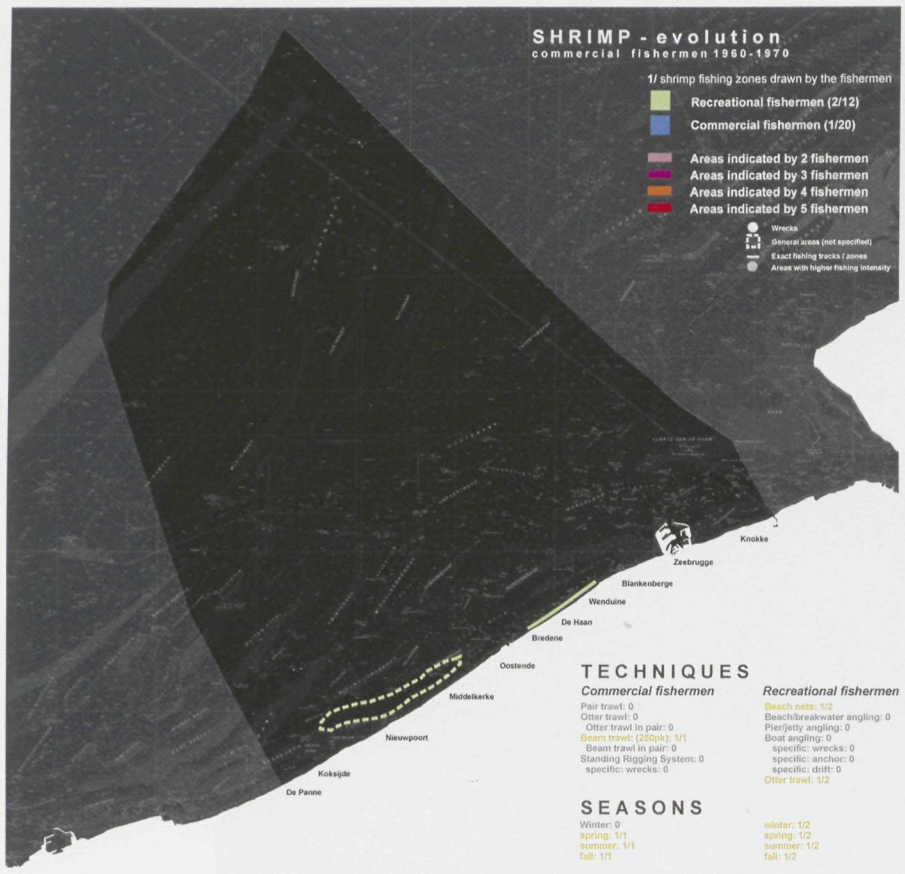
commercial & recreational fishermen 1950 - 2010

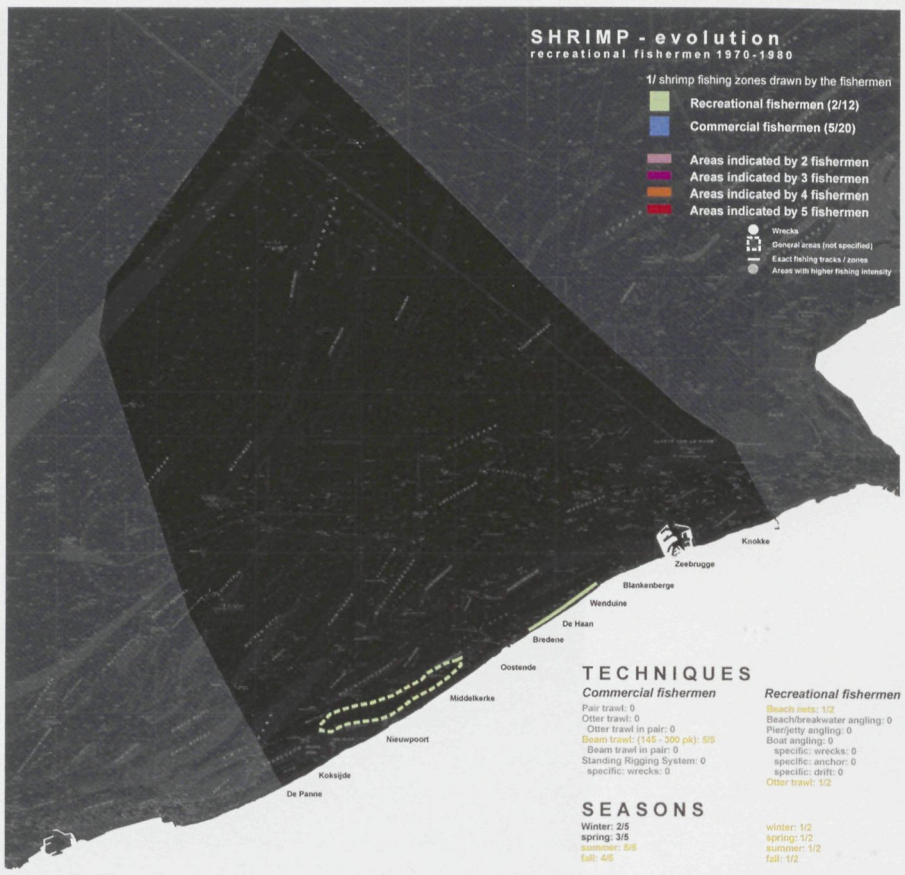


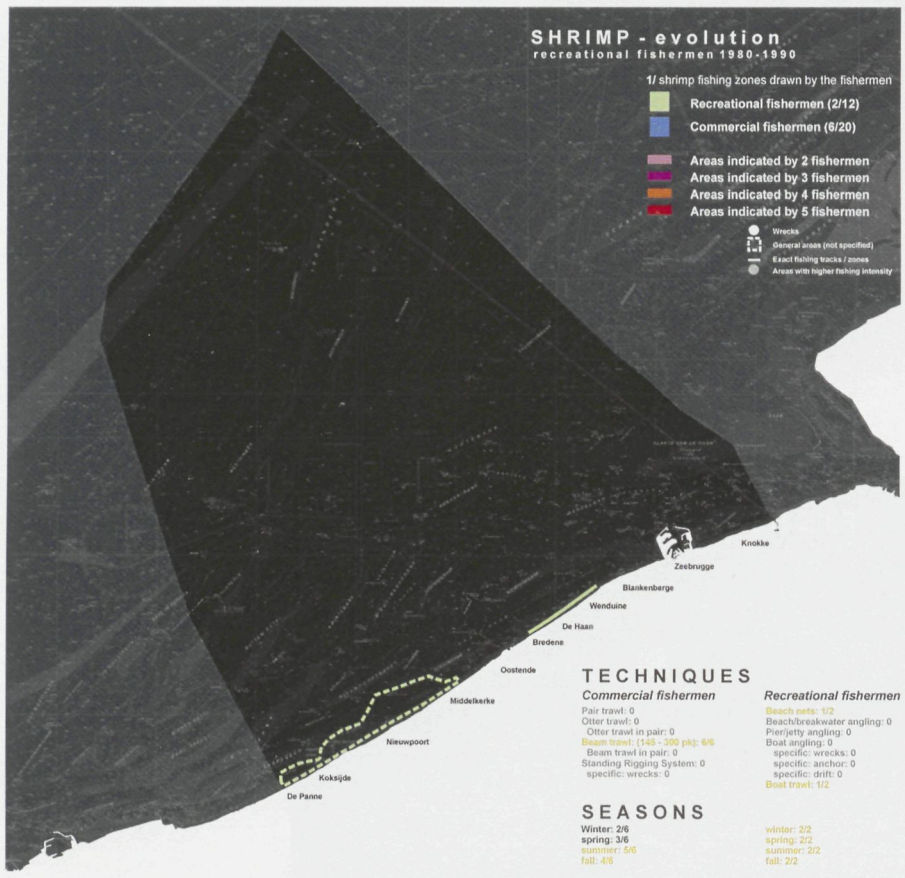


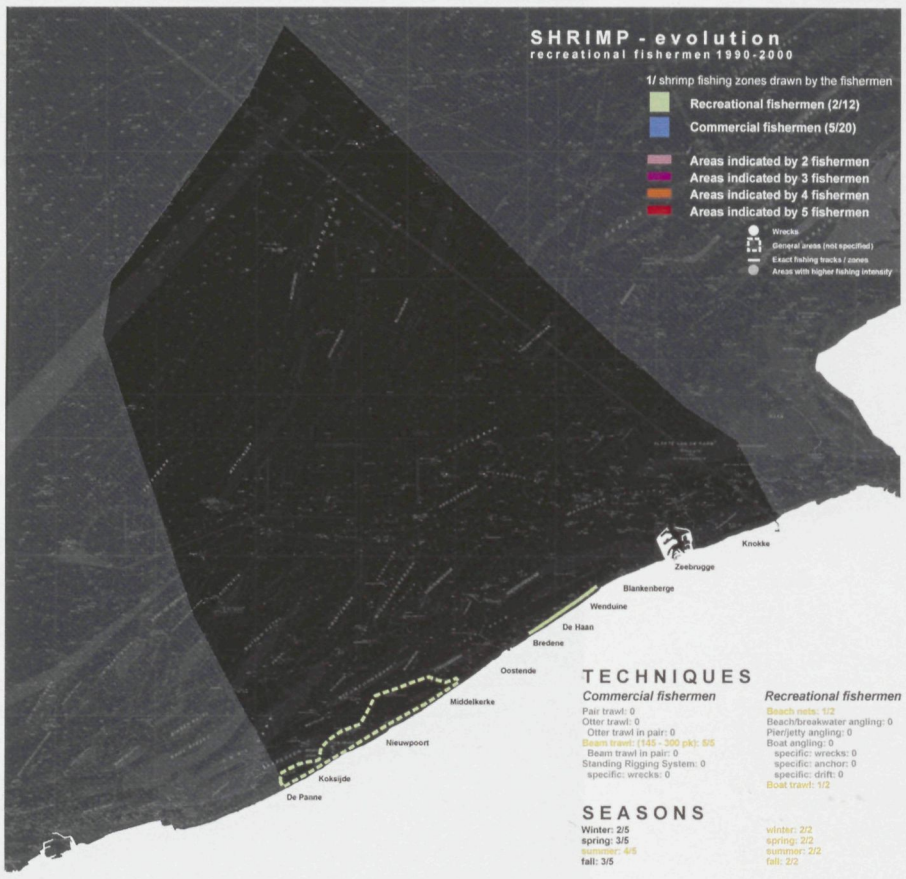
SHRIMP - fishing zones

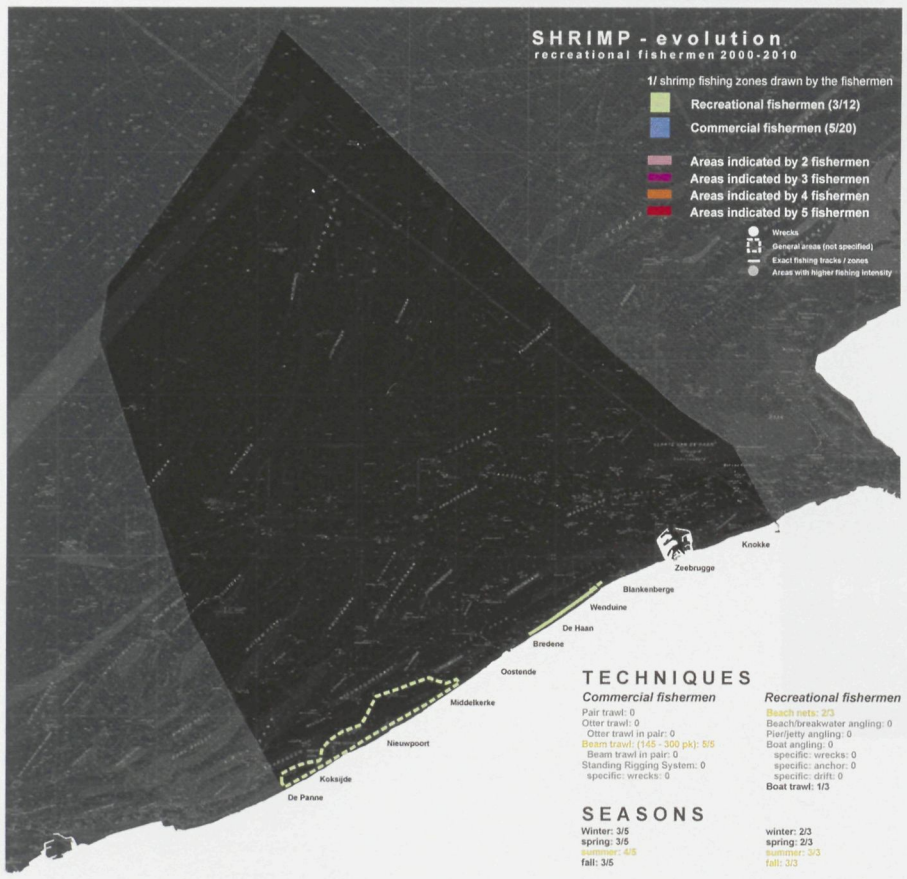
commercial & recreational fishermen 1950 - 2010





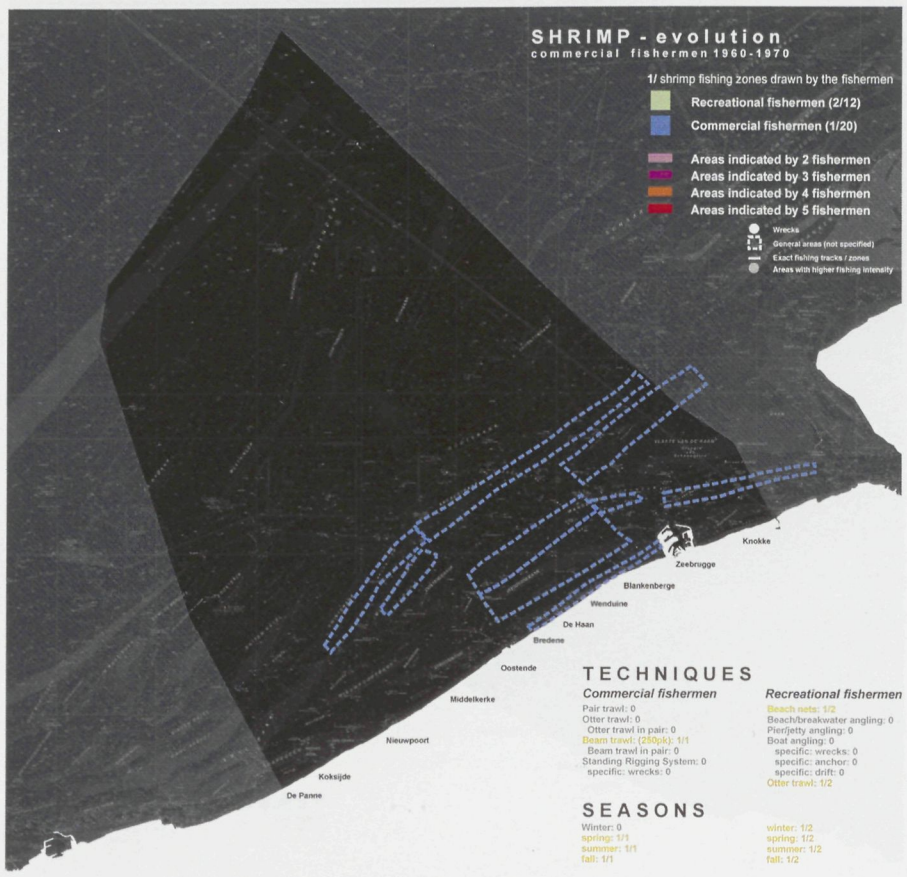


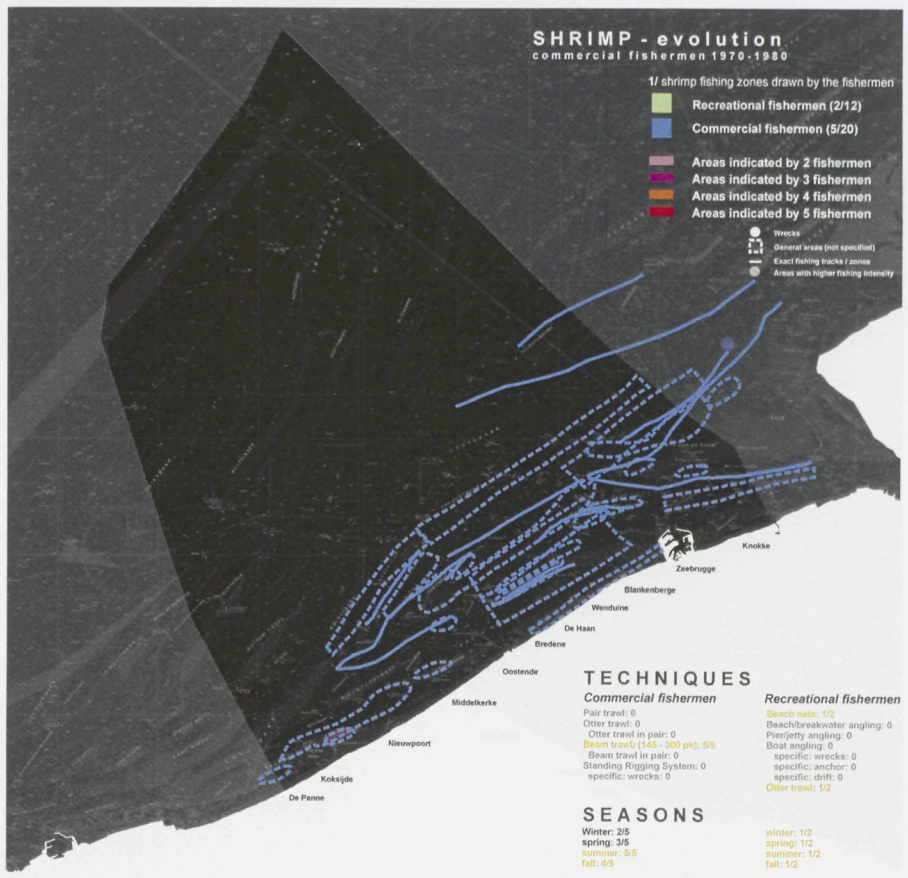


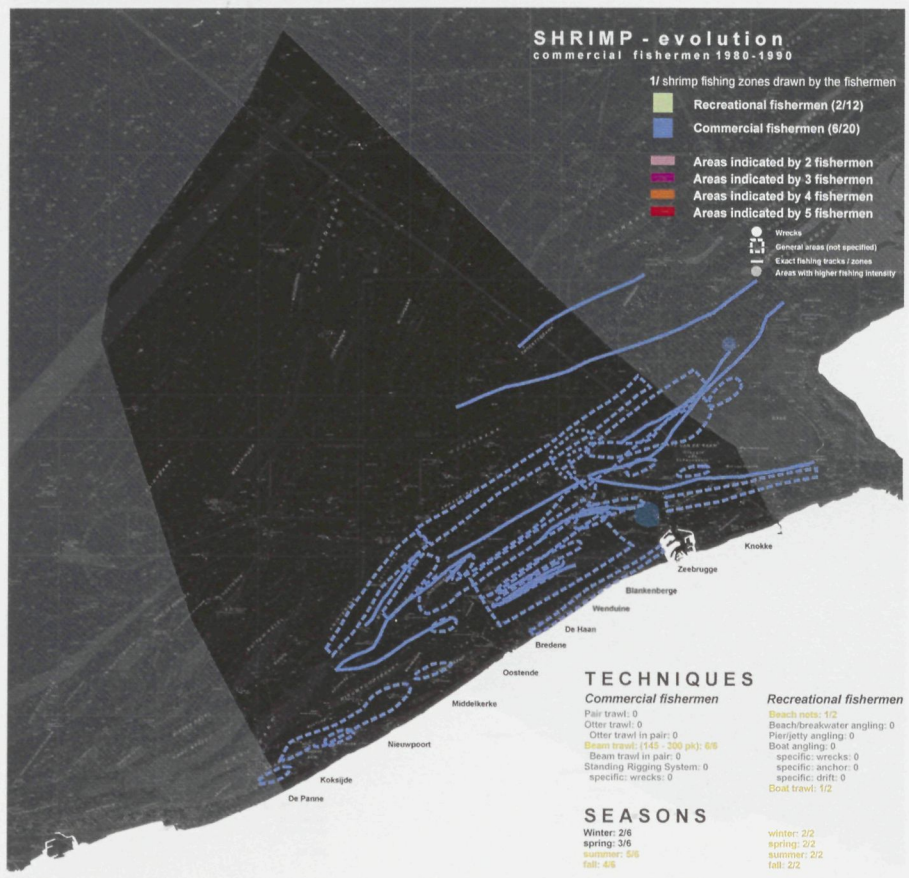


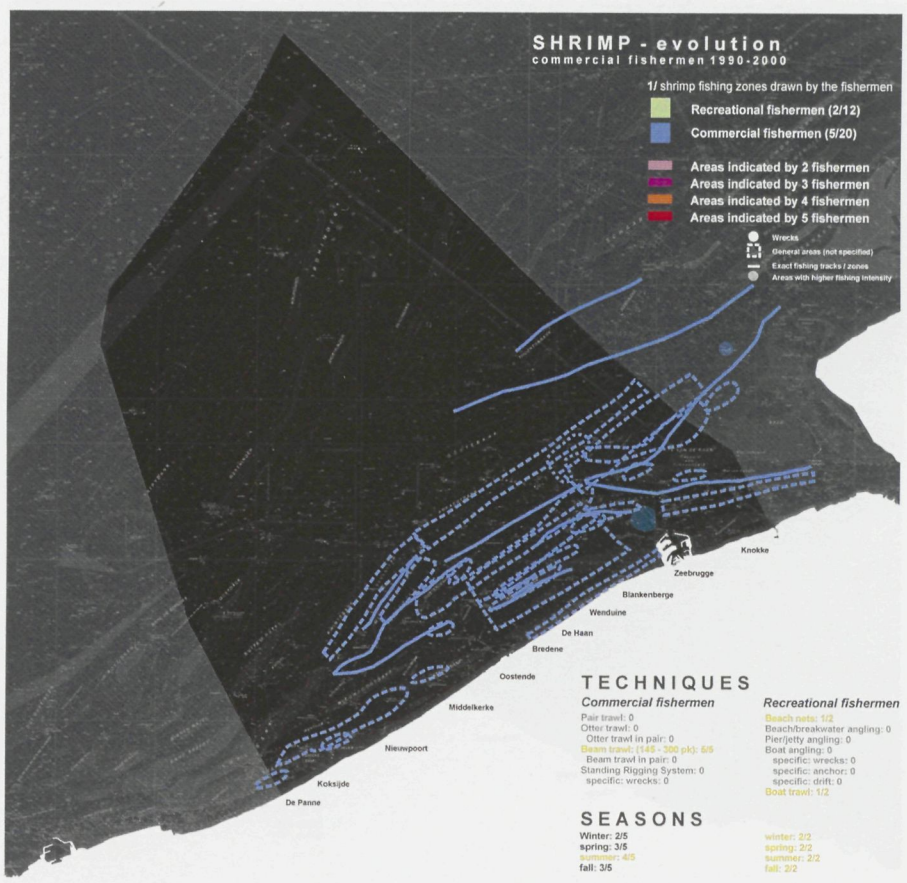
SHRIMP - evolution

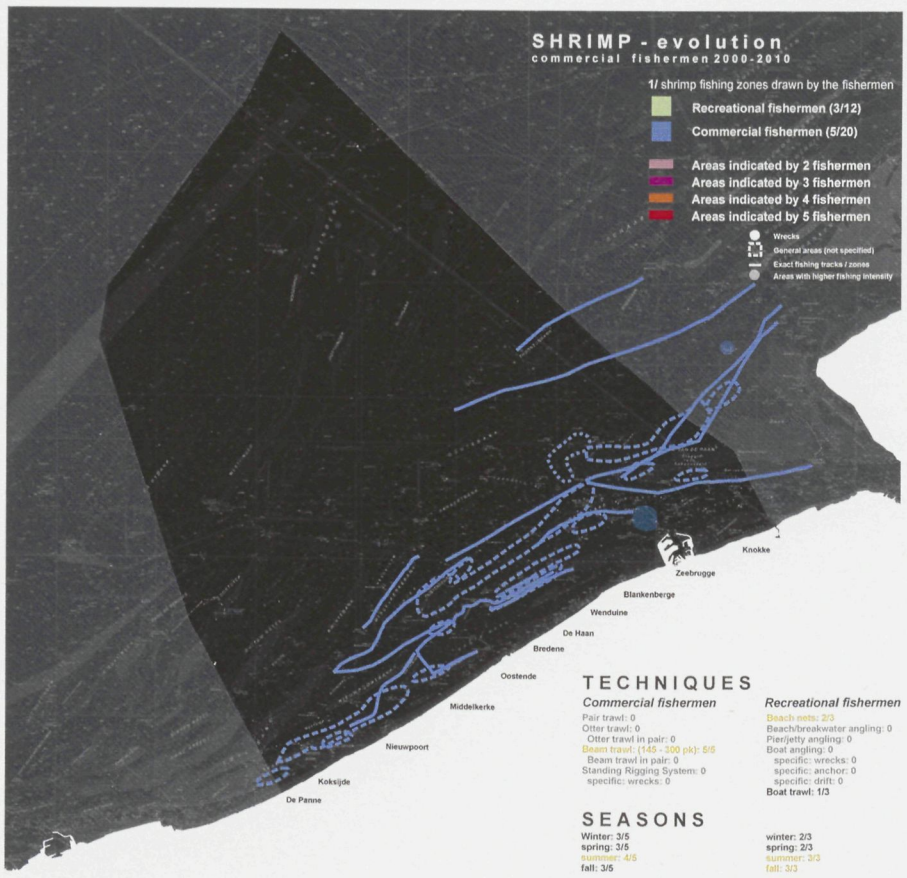
recreational fishermen 1960 - 2010



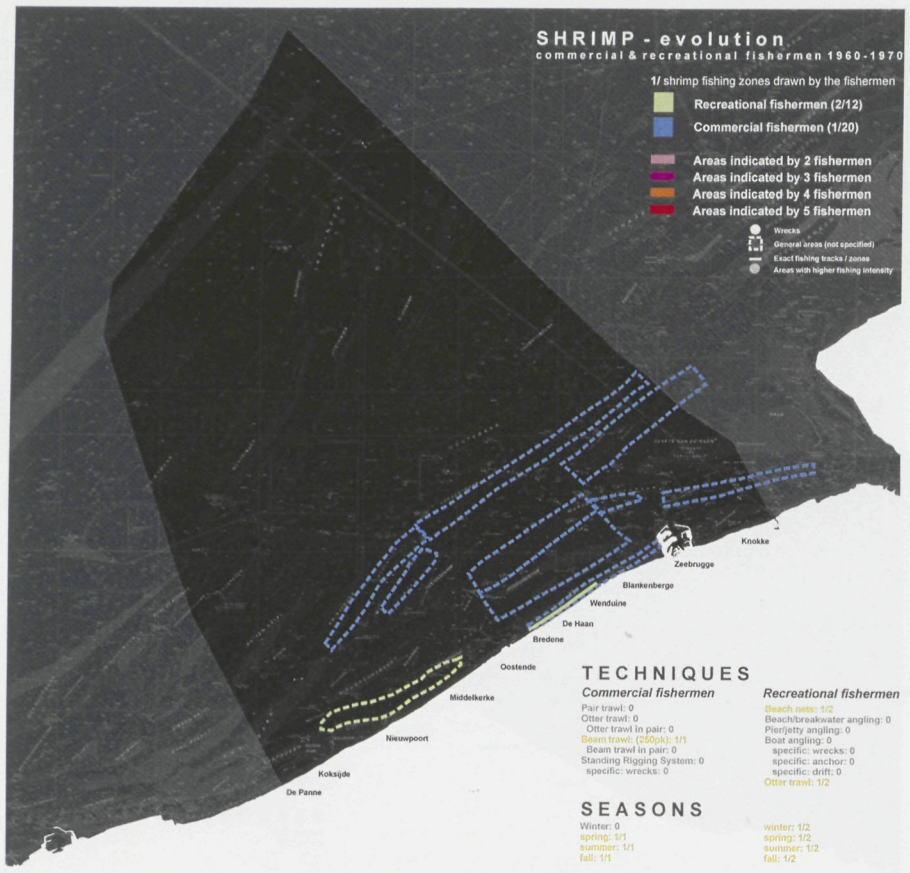


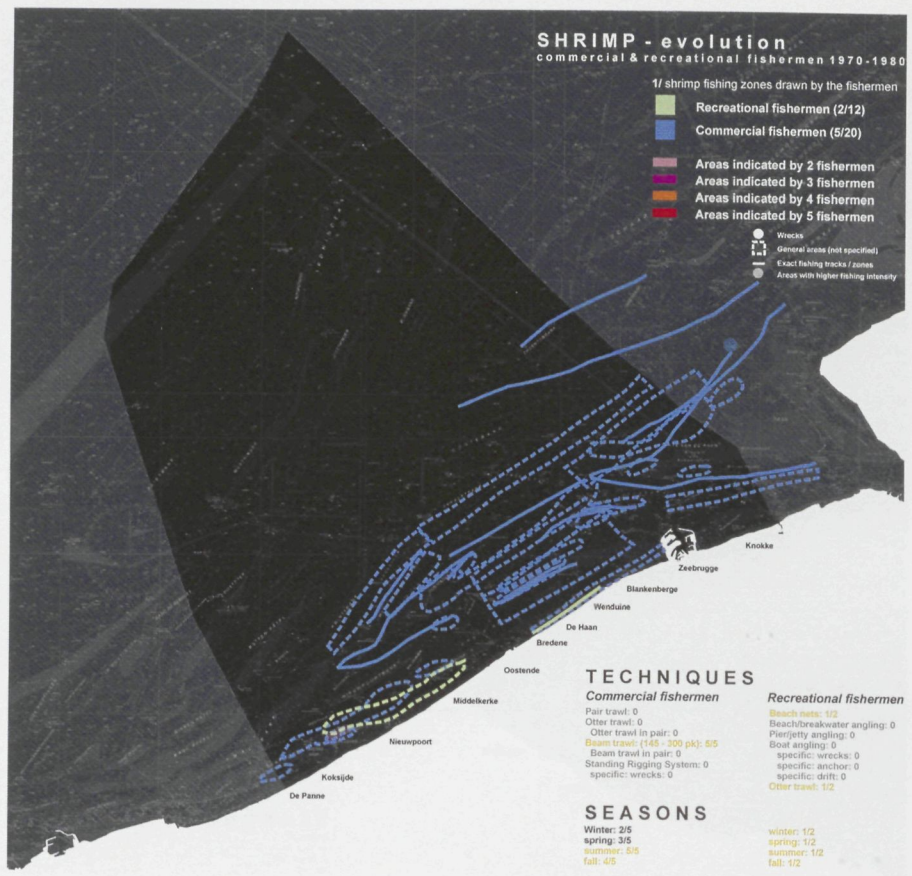


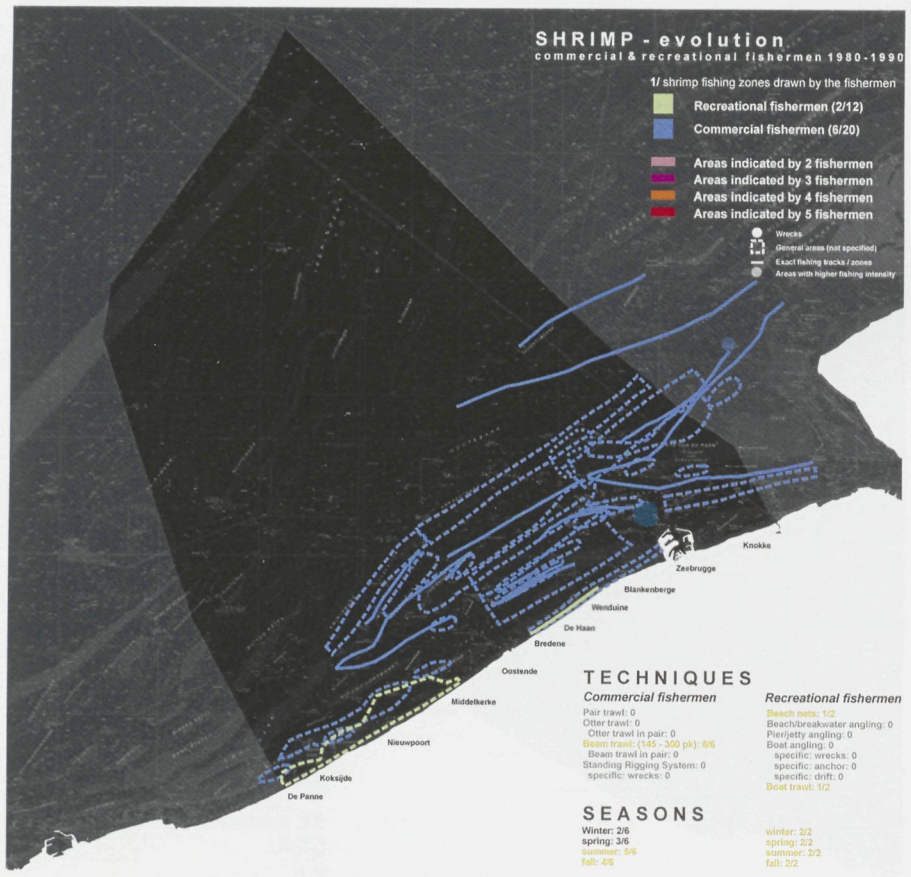


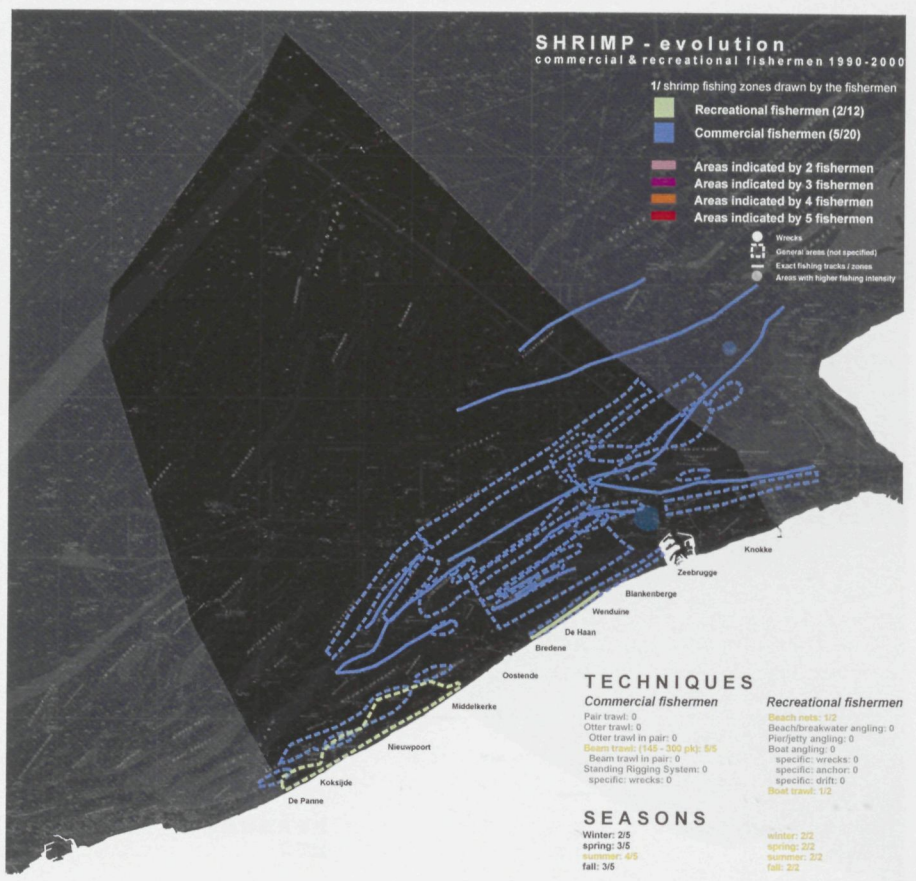


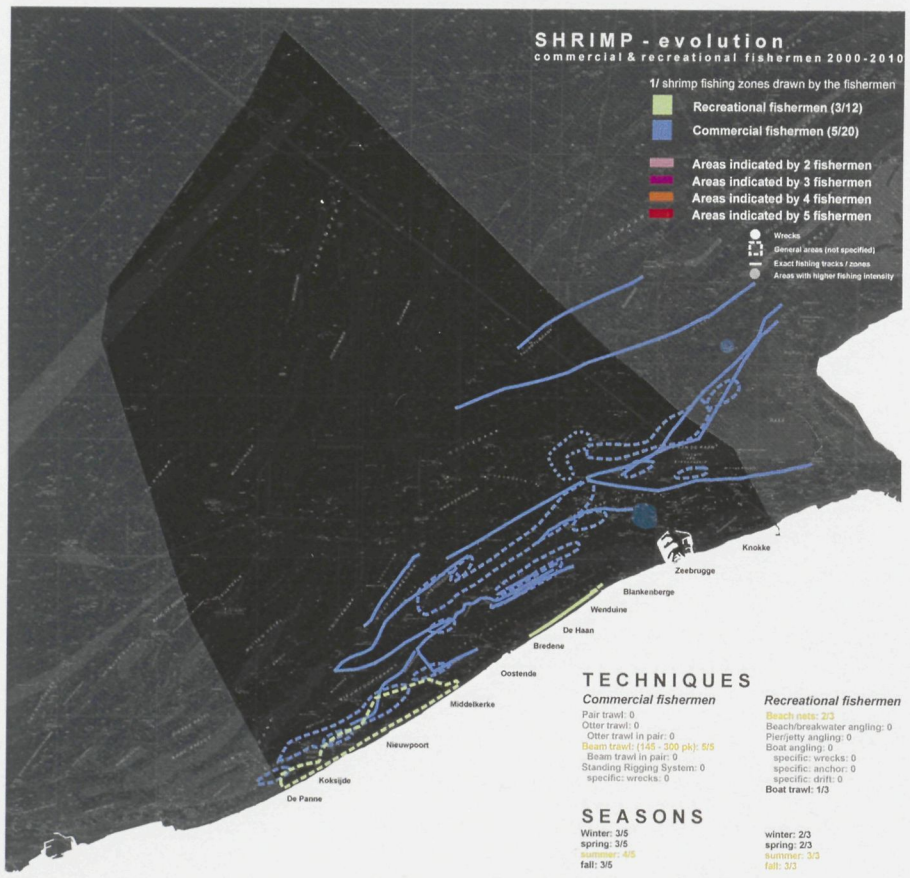
SHRIMP - evolution
commercial fishermen 1960 - 2010





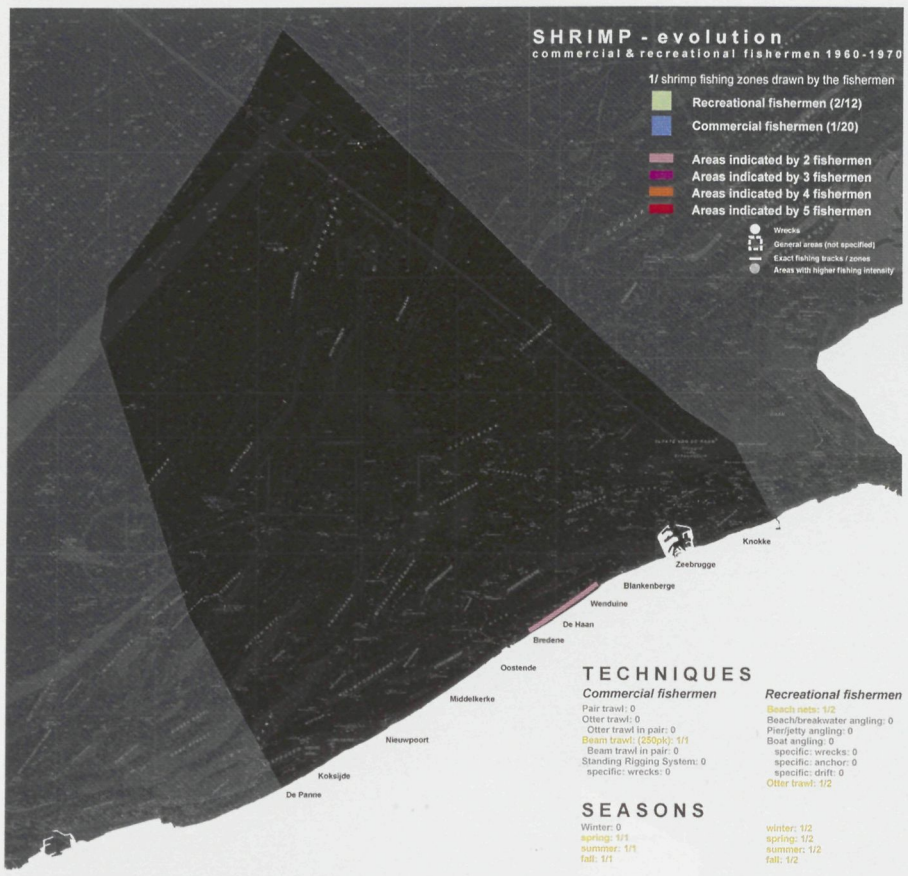


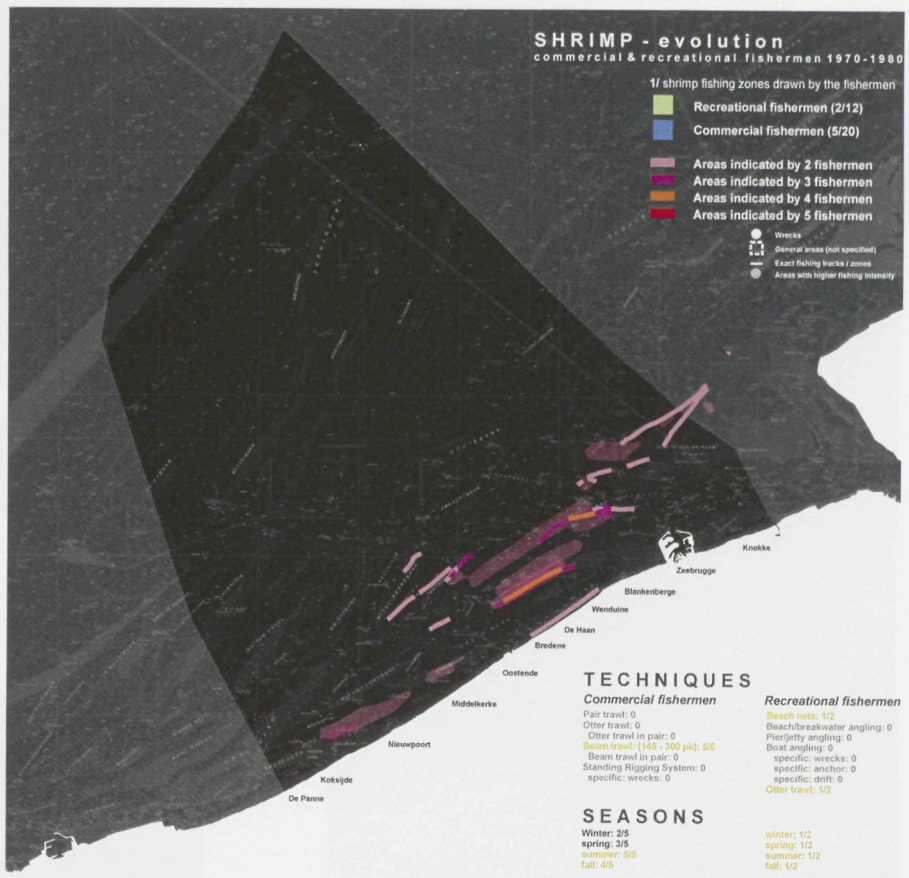


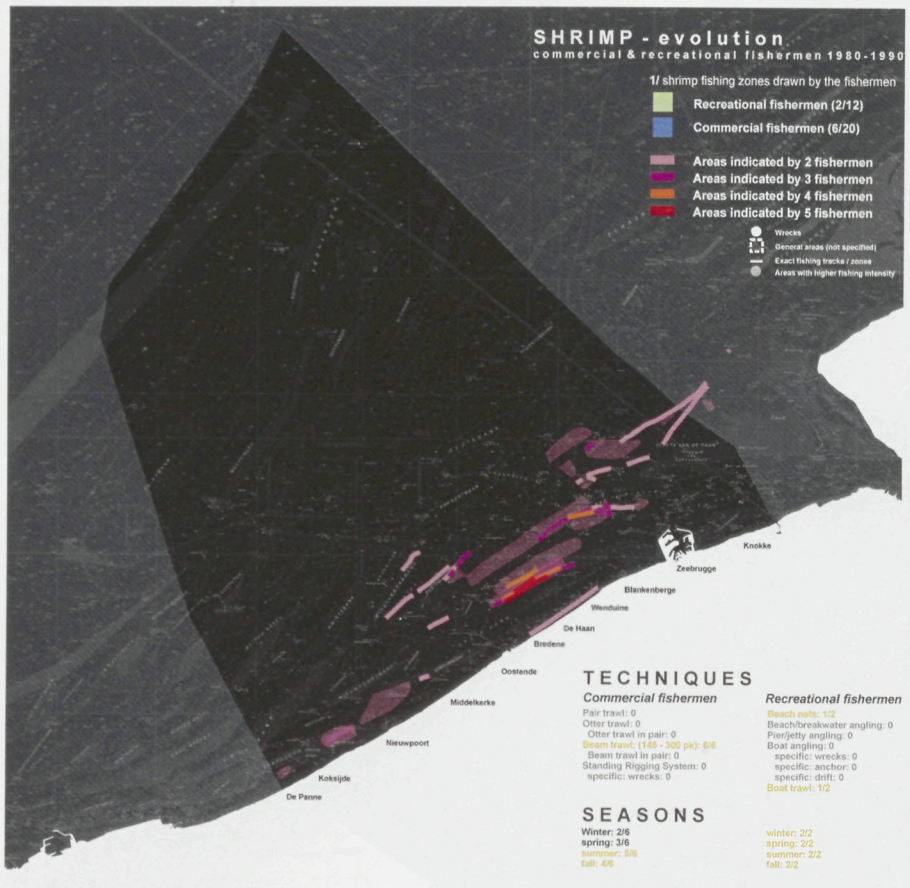


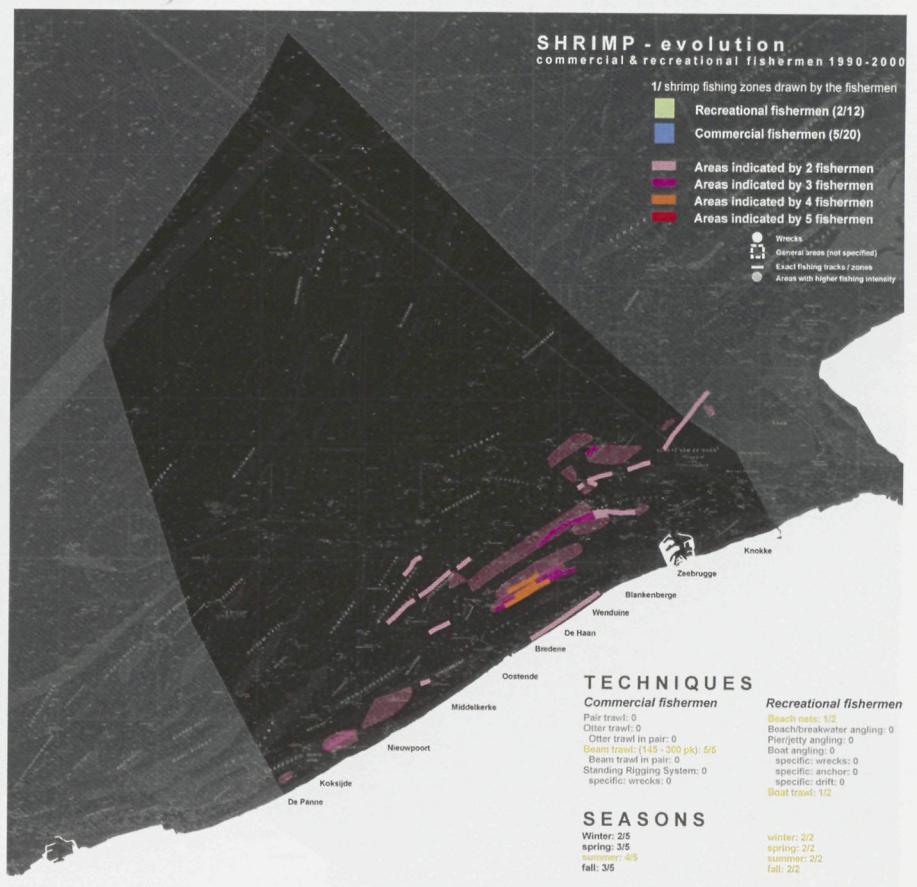
SHRIMP - evolution

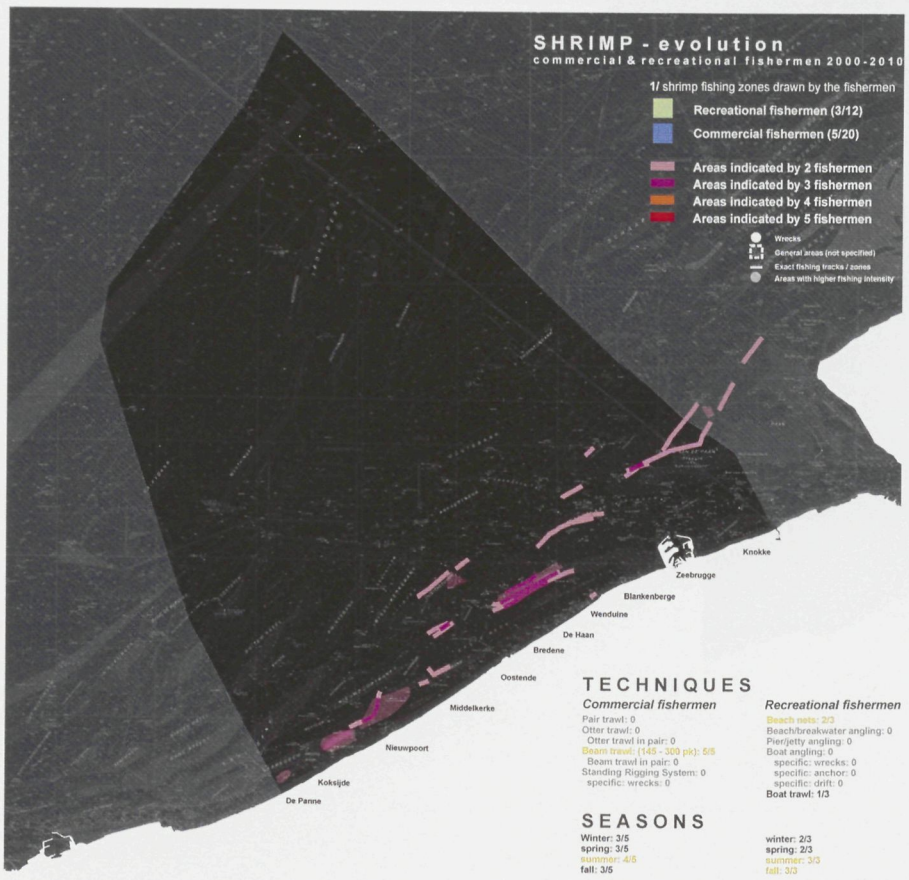
recreational & commercial fishermen 1960 - 2010







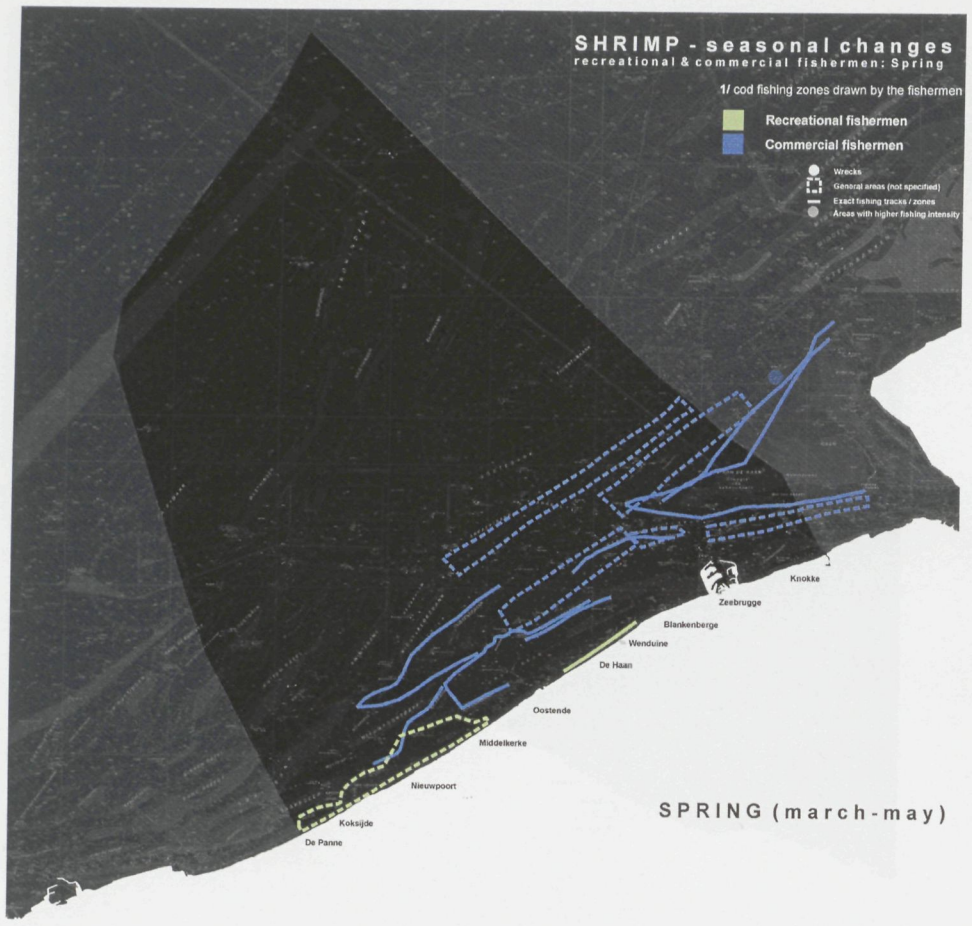


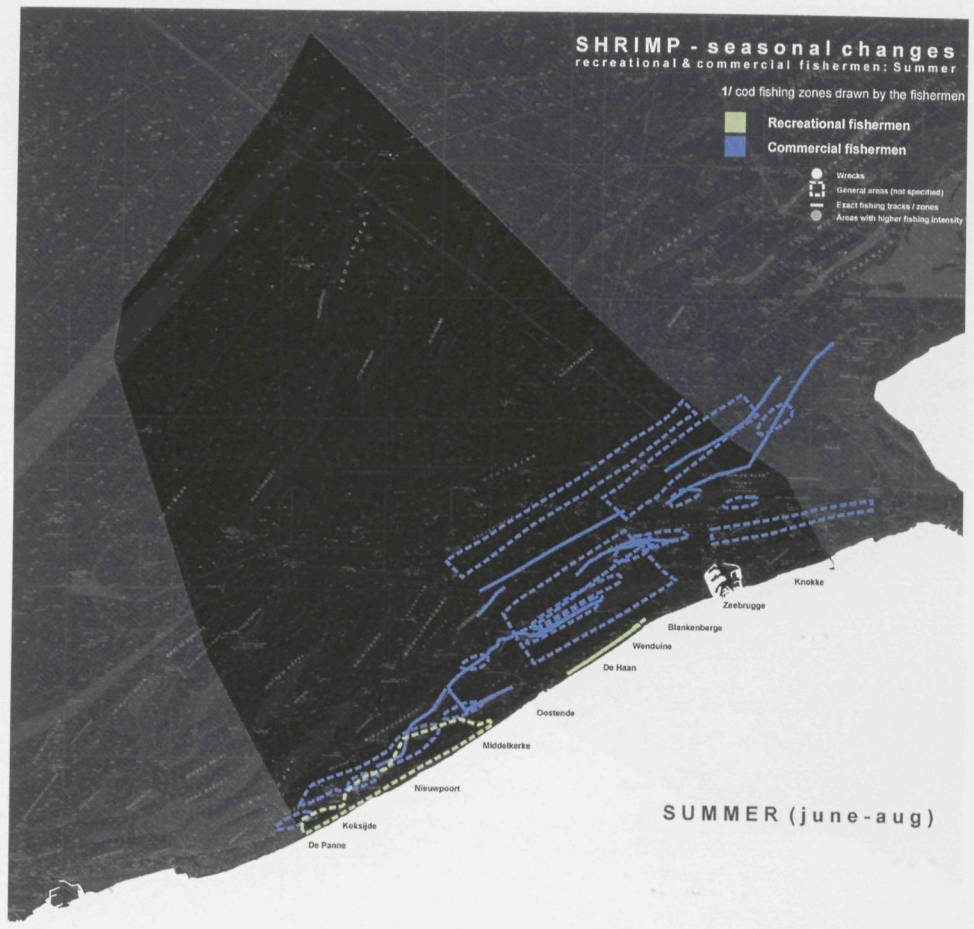


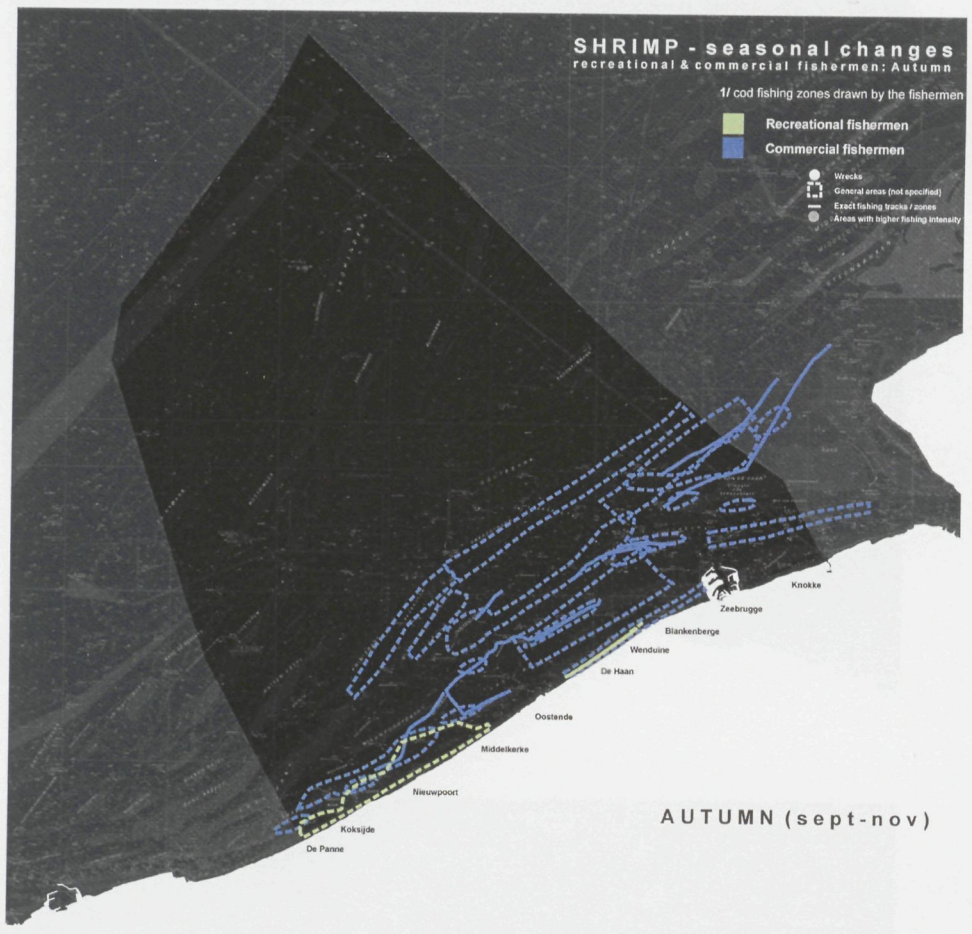
SHRIMP - evolution

commercial & recreational fishermen 1960 - 2010

areas fished by 2 or more fishermen









SHRIMP - seasonal changes
commercial & recreational fishermen 1950 - 2010



WINTER (jan)



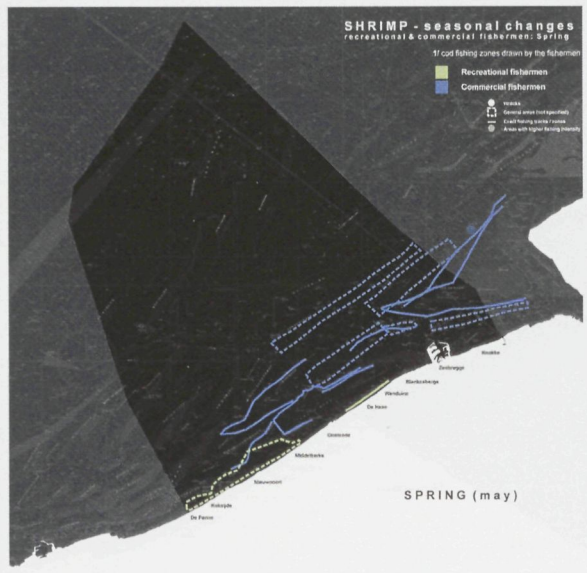
WINTER (feb)



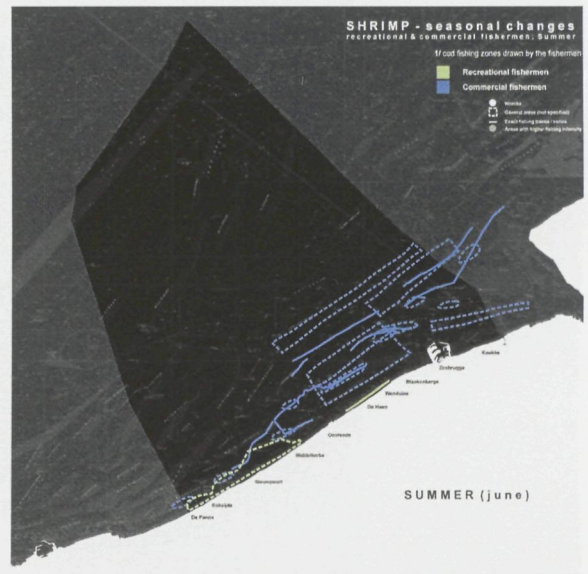
SPRING (march)



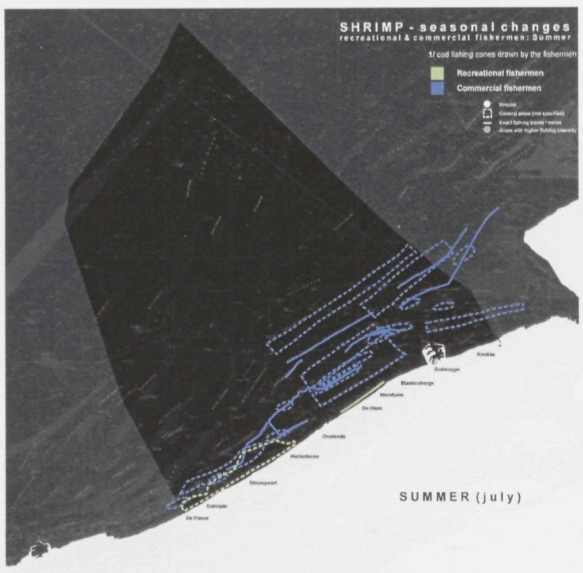
SPRING (april)



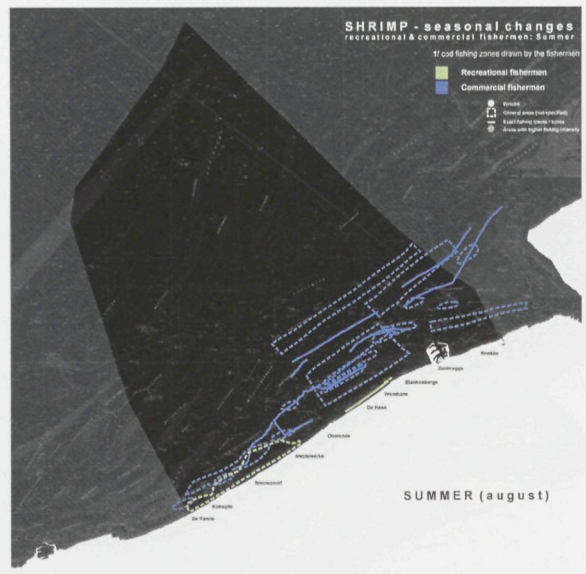
SPRING (may)



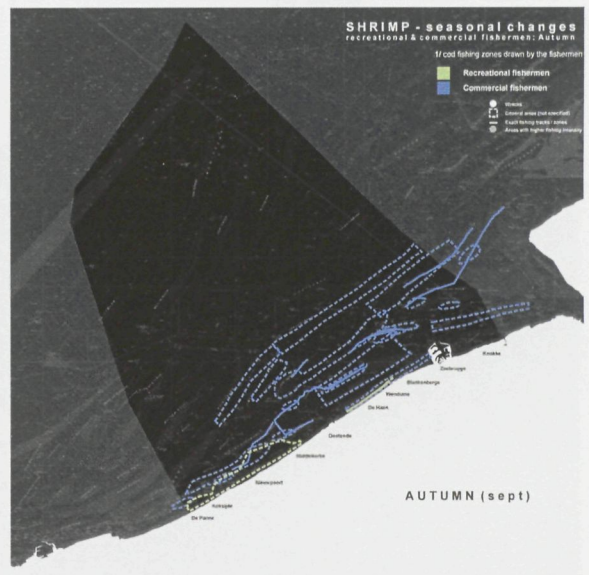
SUMMER (june)



SUMMER (july)



SUMMER (august)



AUTUMN (sept)



AUTUMN (oct)



AUTUMN (nov)



WINTER (dec)

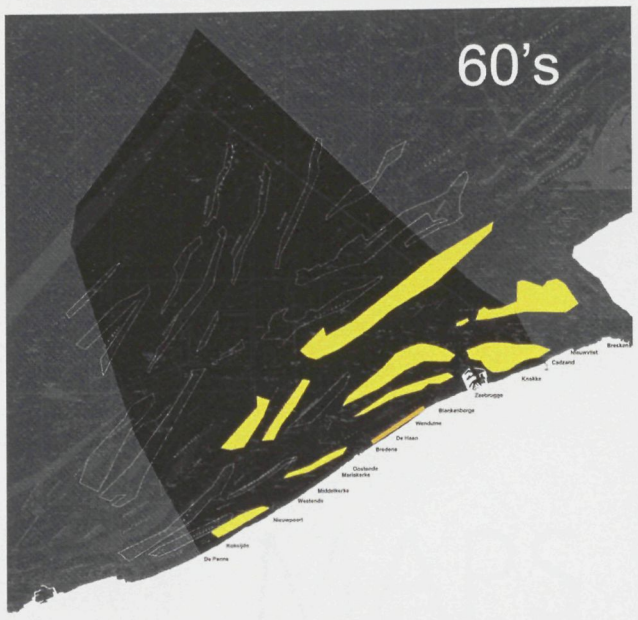
SHRIMP - seasonal changes january-december

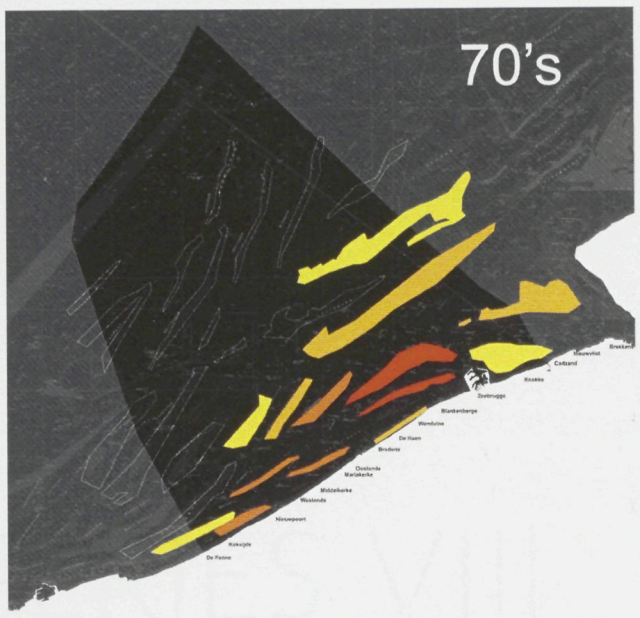
commercial & recreational fishermen 1950 - 2010

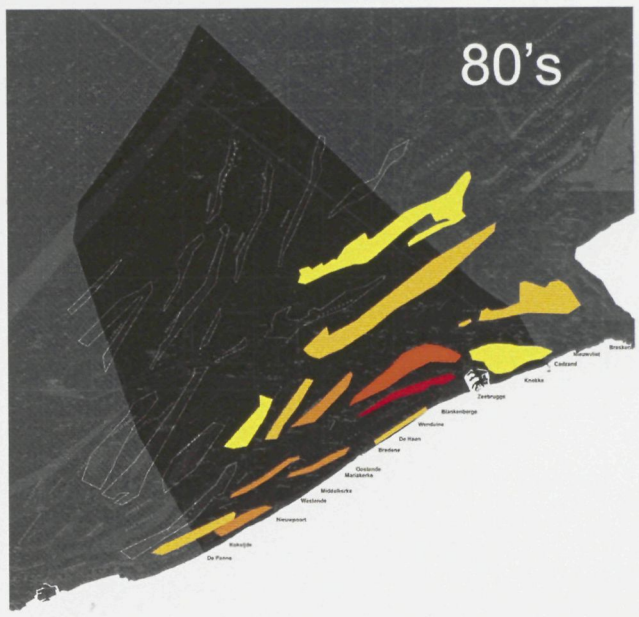


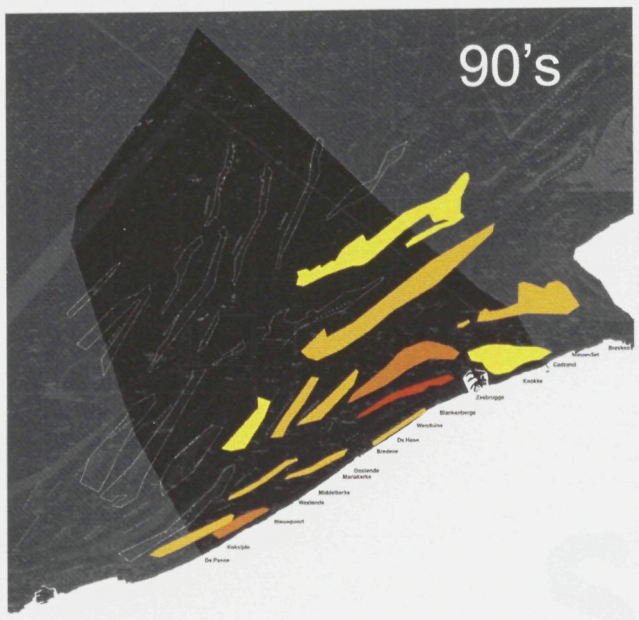
SHRIMP - spawning zones

commercial & recreational fishermen 1950 - 2010











SHRIMP - EVOLUTION OF FISHING ZONES

commercial & recreational fishermen 1960-2010

banks / beach indicated by fishermen

number of fishermen on same spot :

1
2
3
4
5

LECOFISH SEPTEMBER 2011









SHRIMP - SEASONAL CHANGES

commercial & recreational fishermen 1960-2010

banks / beach indicated by fishermen

number of fishermen on same spot :

1
2
3
4

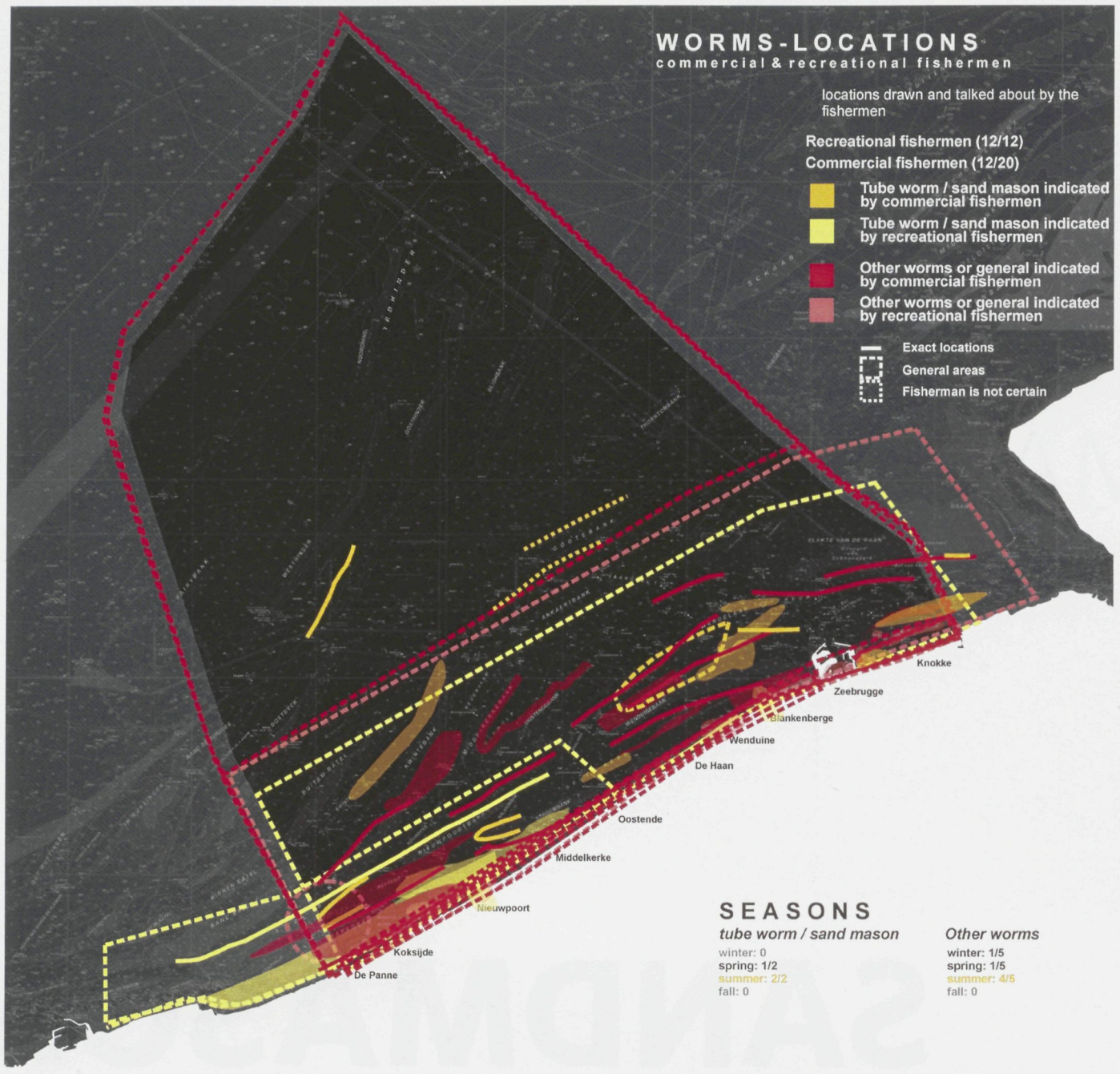
LECOFISH SEPTEMBER 2011

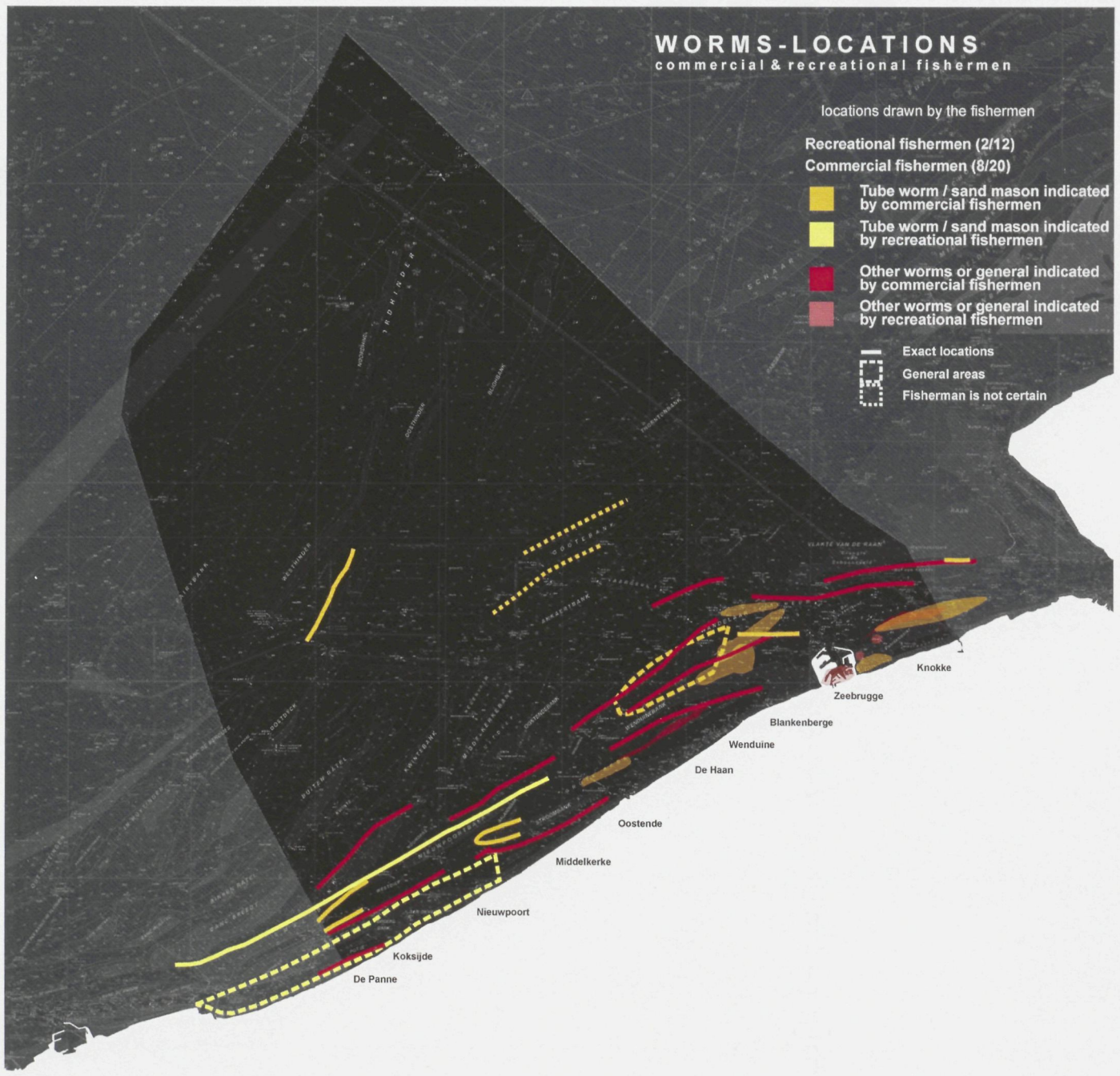
SHRIMP - structure maps

commercial & recreational fishermen 1950 - 2010

MAPS SERIES VIII

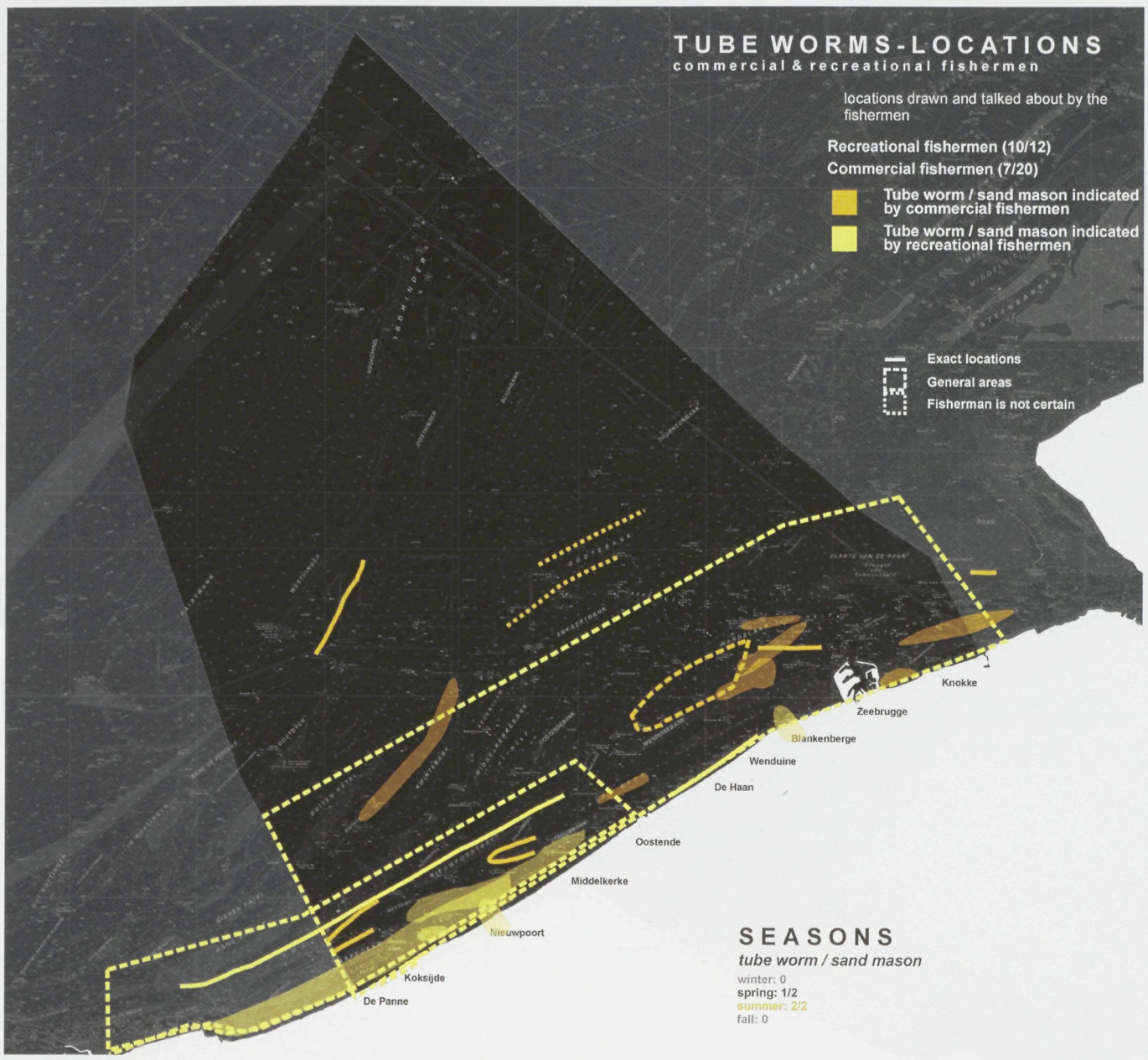
SANDMASON AND OTHER WORMS

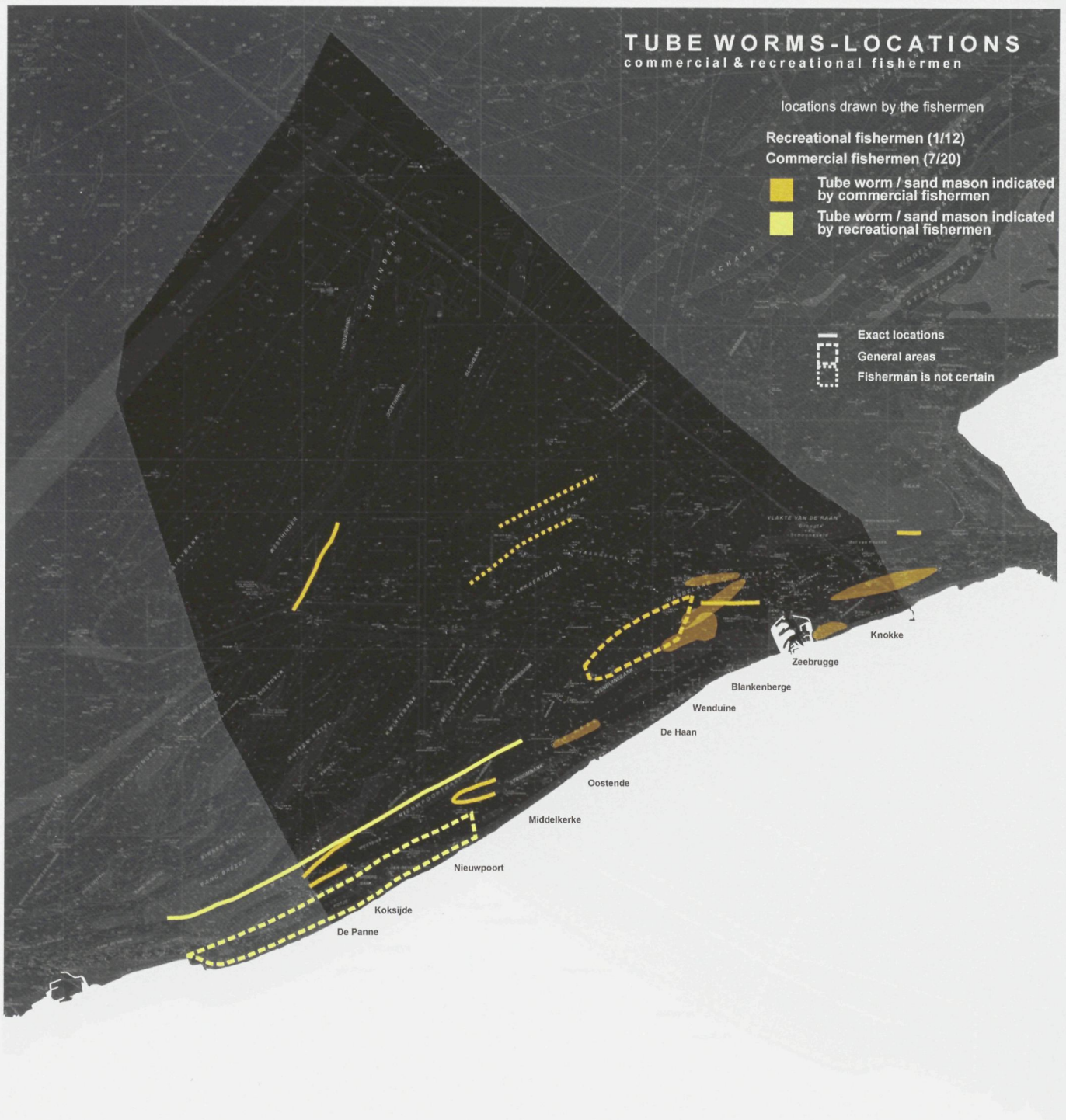




WORMS - locations drawn and talked about

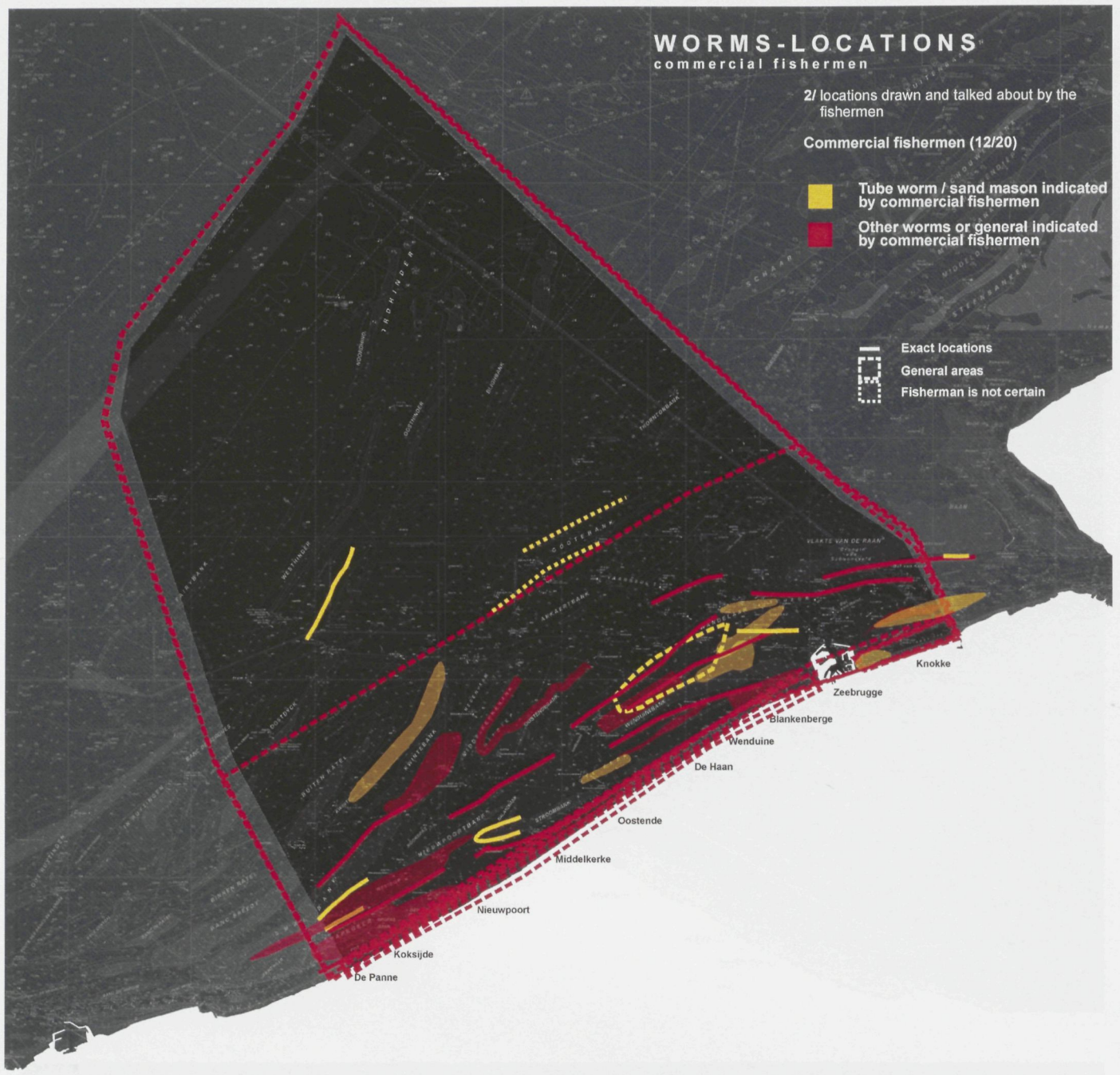
commercial & recreational fishermen 1950 - 2010

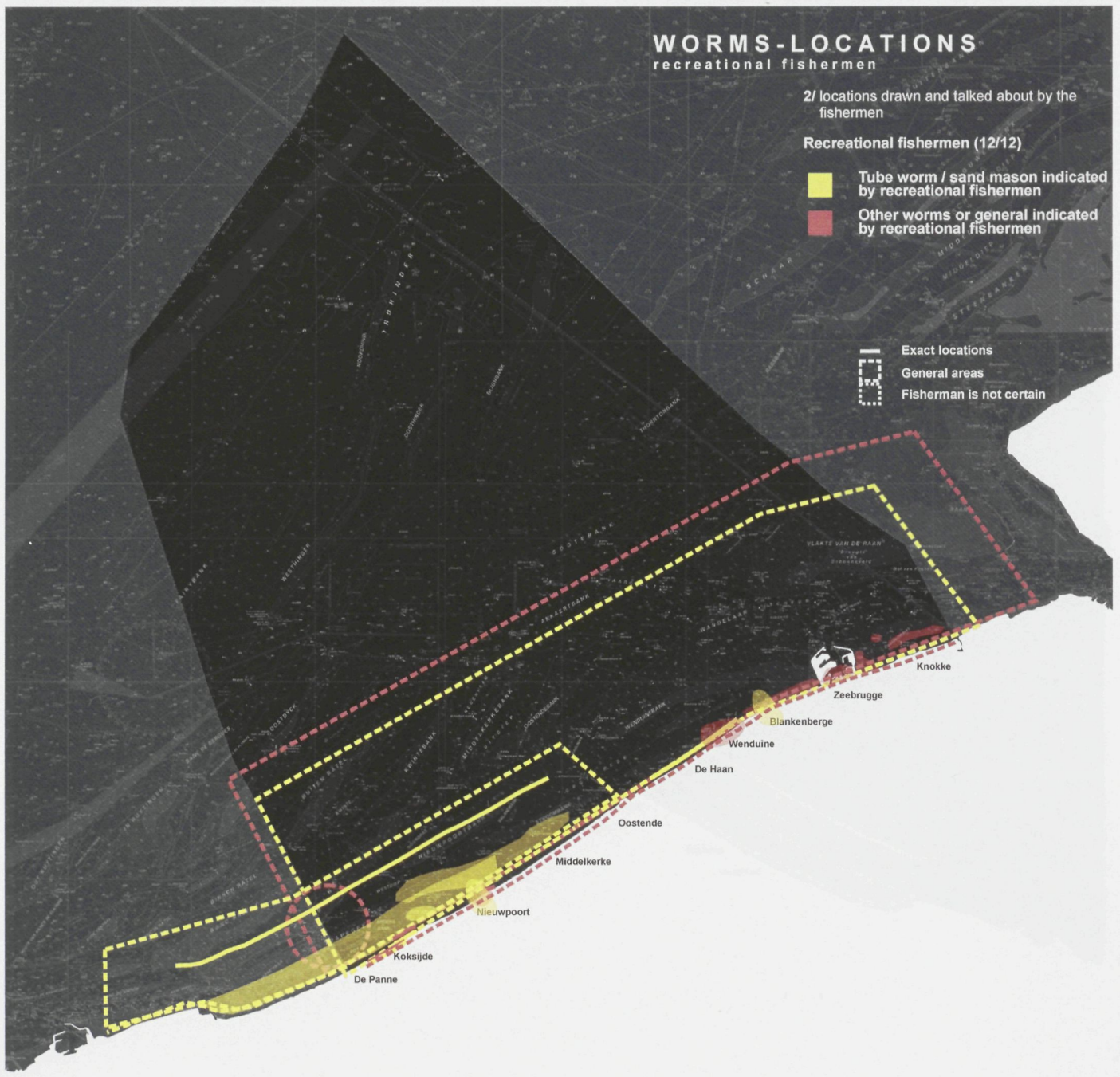




TUBE WORMS - locations drawn and talked about

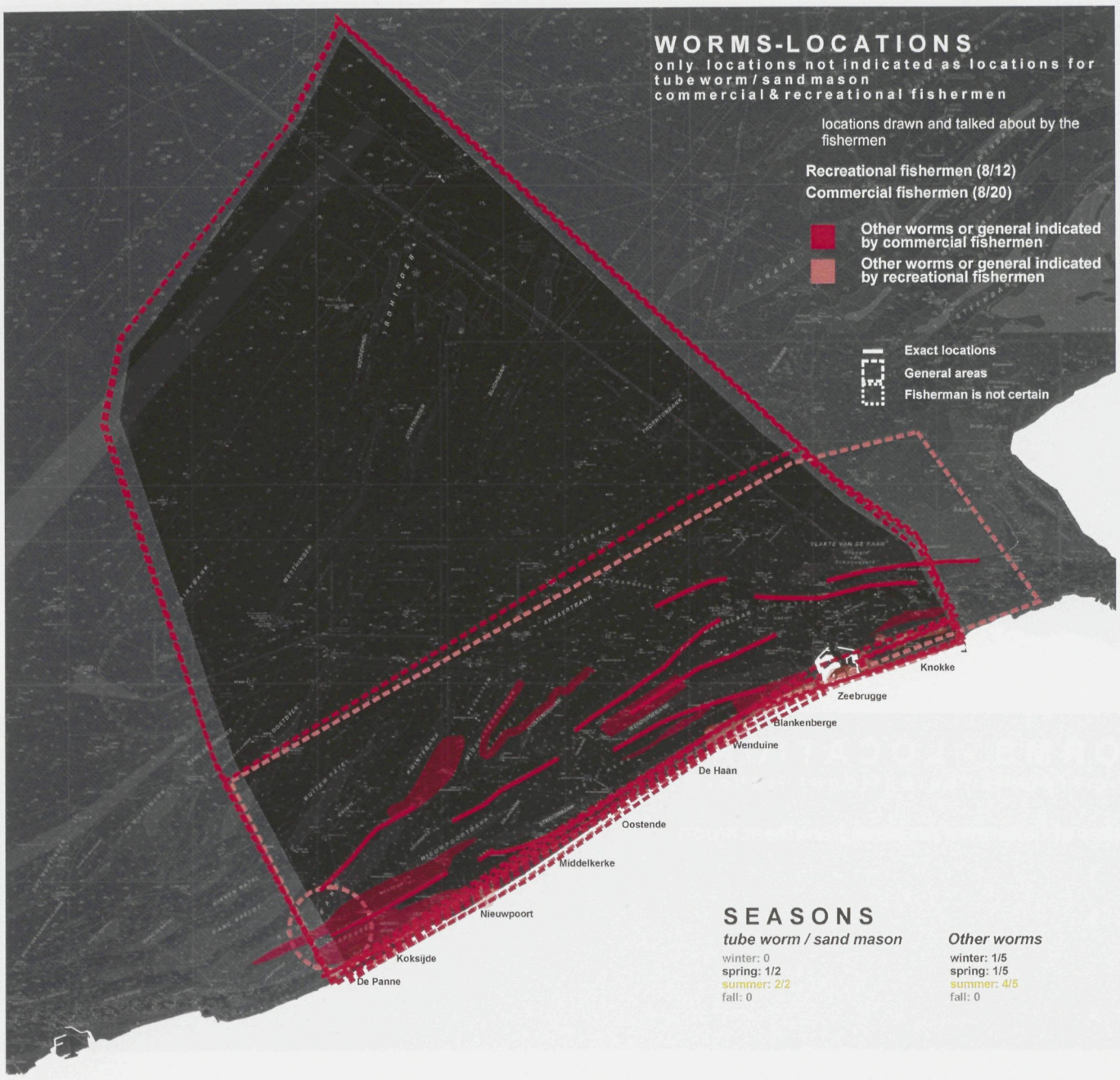
commercial & recreational fishermen 1950 - 2010

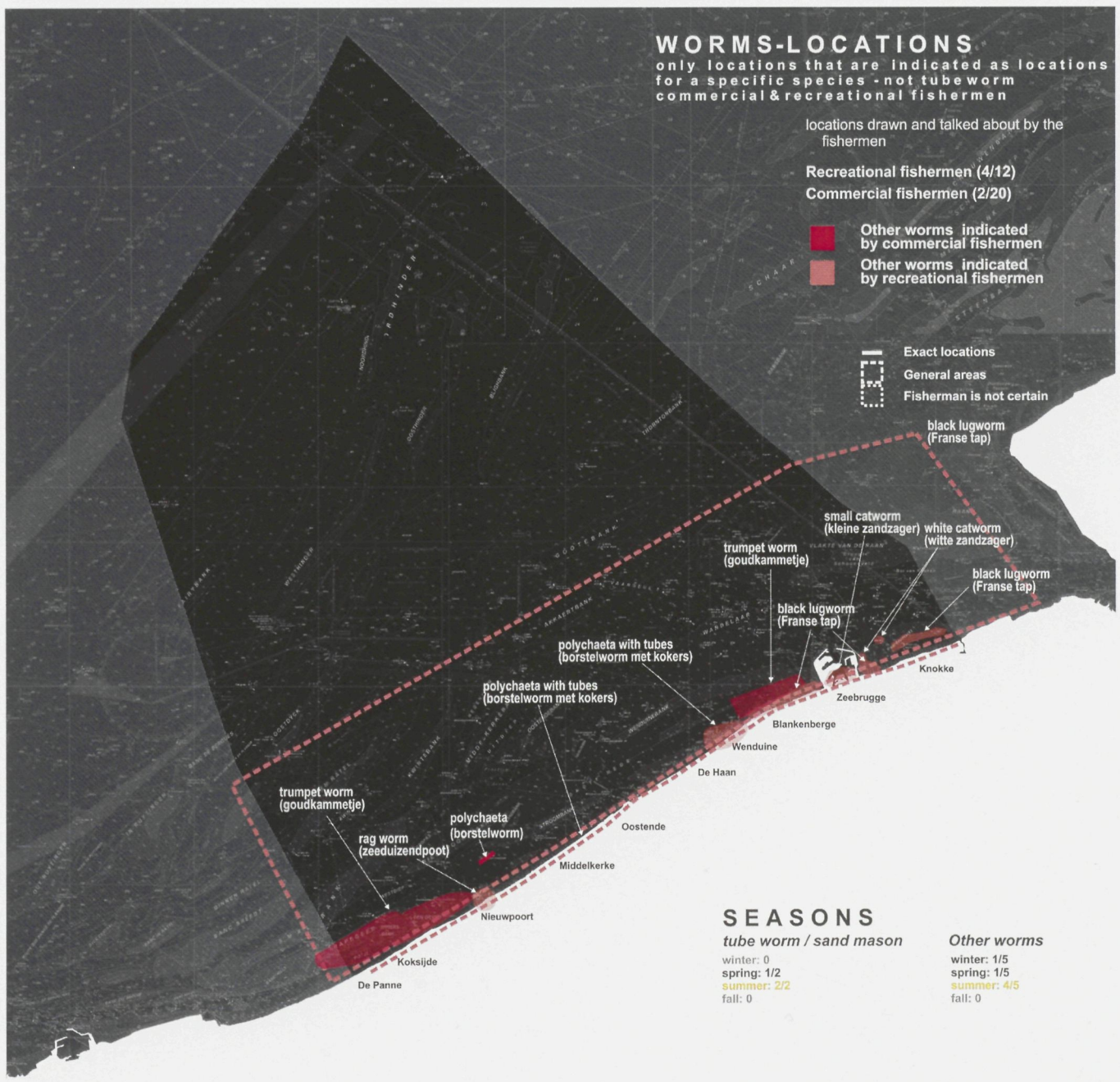




WORMS - locations

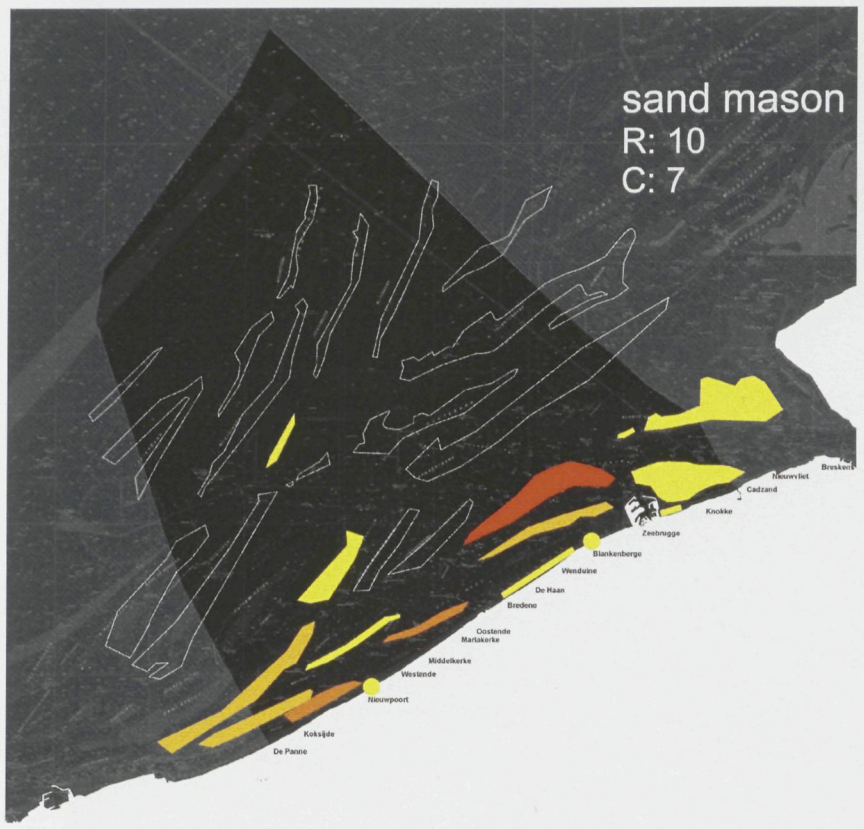
commercial & recreational fishermen 1950 - 2010

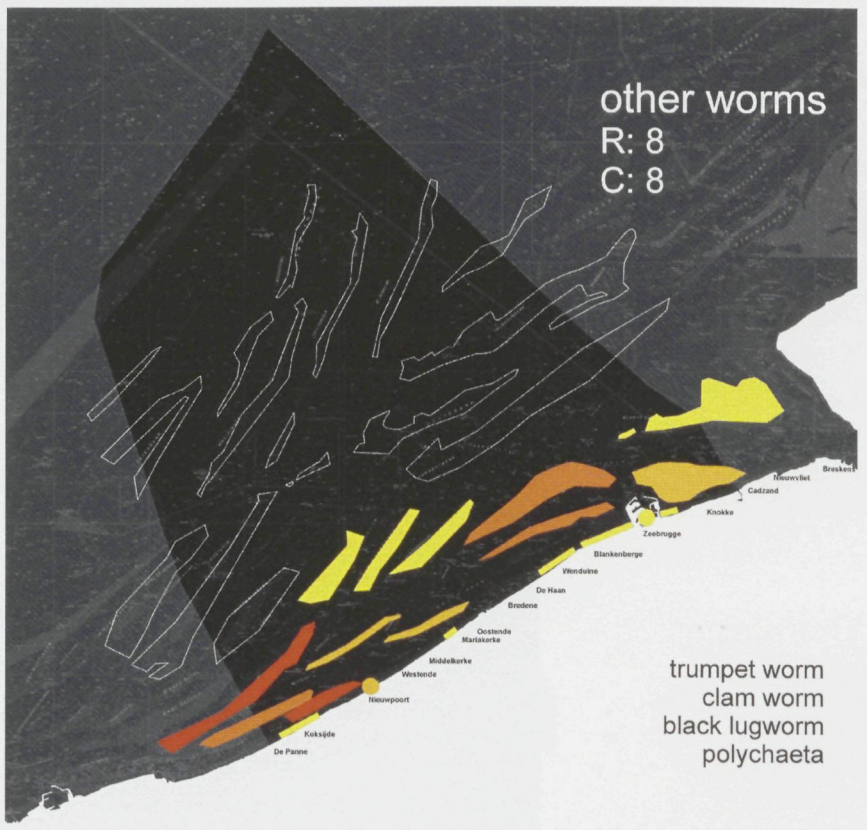




WORMS - not sand mason - locations drawn and talked about

commercial & recreational fishermen 1950 - 2010





WORMS - LOCATIONS
commercial & recreational fishermen 1960-2010

banks / beach ports indicated by fishermen

number of fishermen on same bank/beach/port:

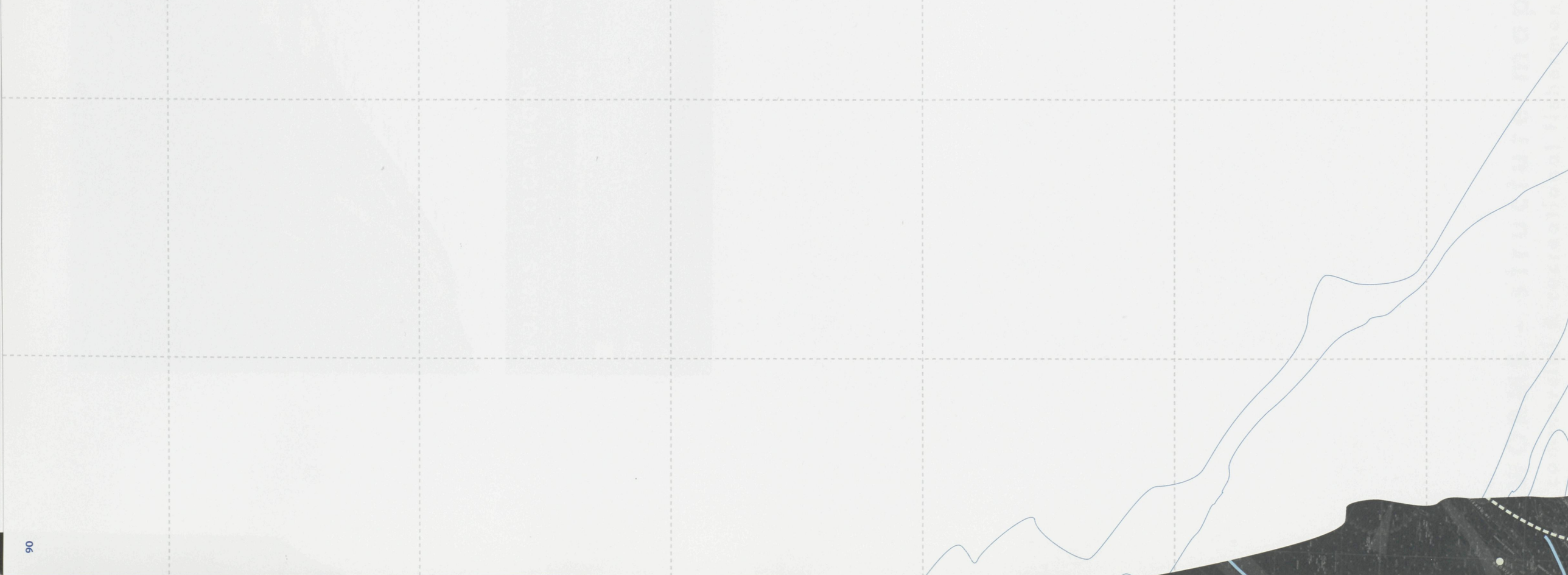
- 1
- 2
- 3
- 4

LECOFISH SEPTEMBER 2011

WORMS - structure maps
commercial & recreational fishermen 1950 - 2010

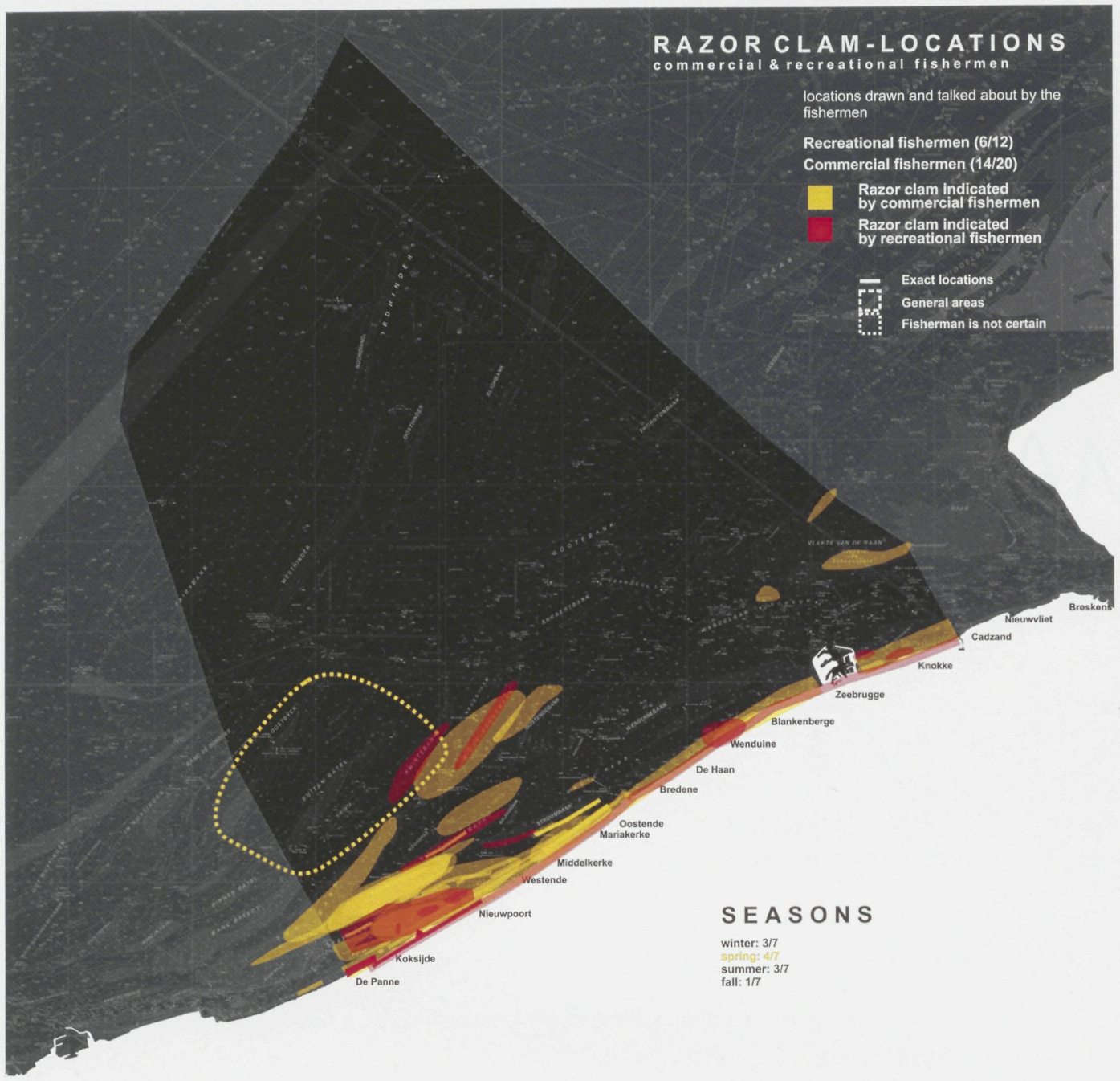
MAPS SERIES IX

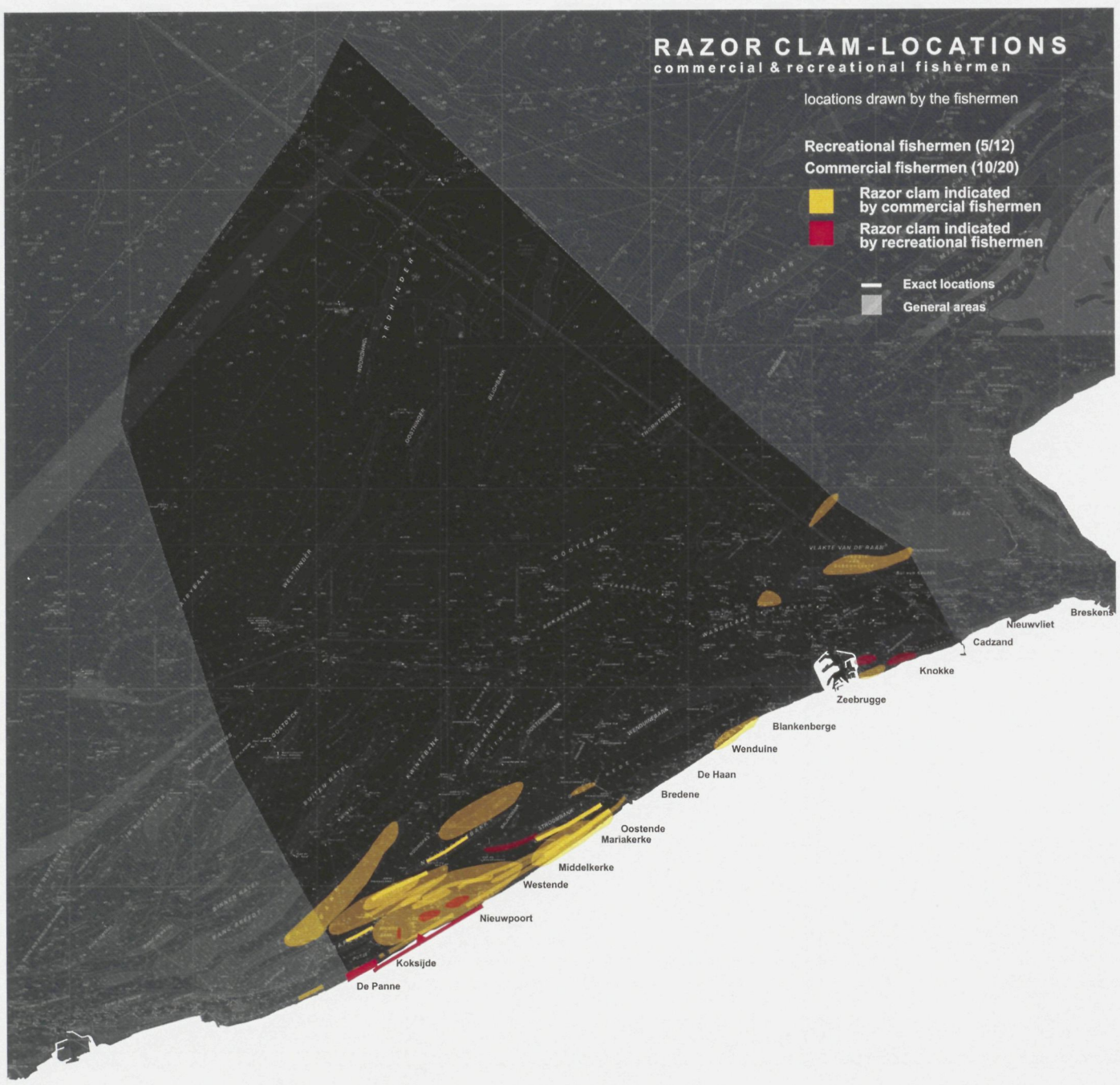
RAZOR FILM



MAPS SERIES IX

RAZOR CLAM





RAZOR CLAM - locations drawn and talked about

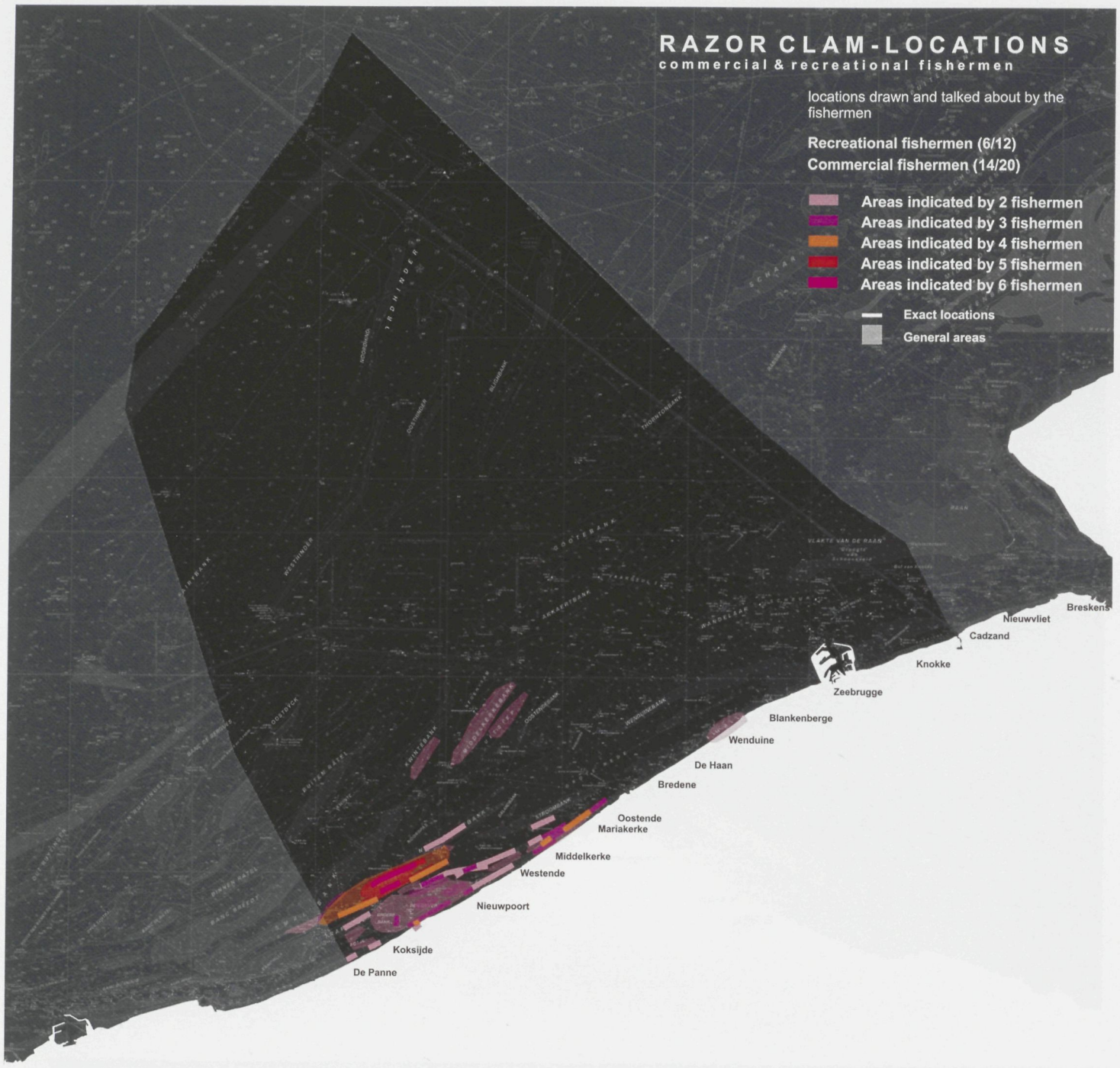
commercial & recreational fishermen 1950 - 2010





RAZOR CLAM - locations

commercial & recreational fishermen 1950 - 2010



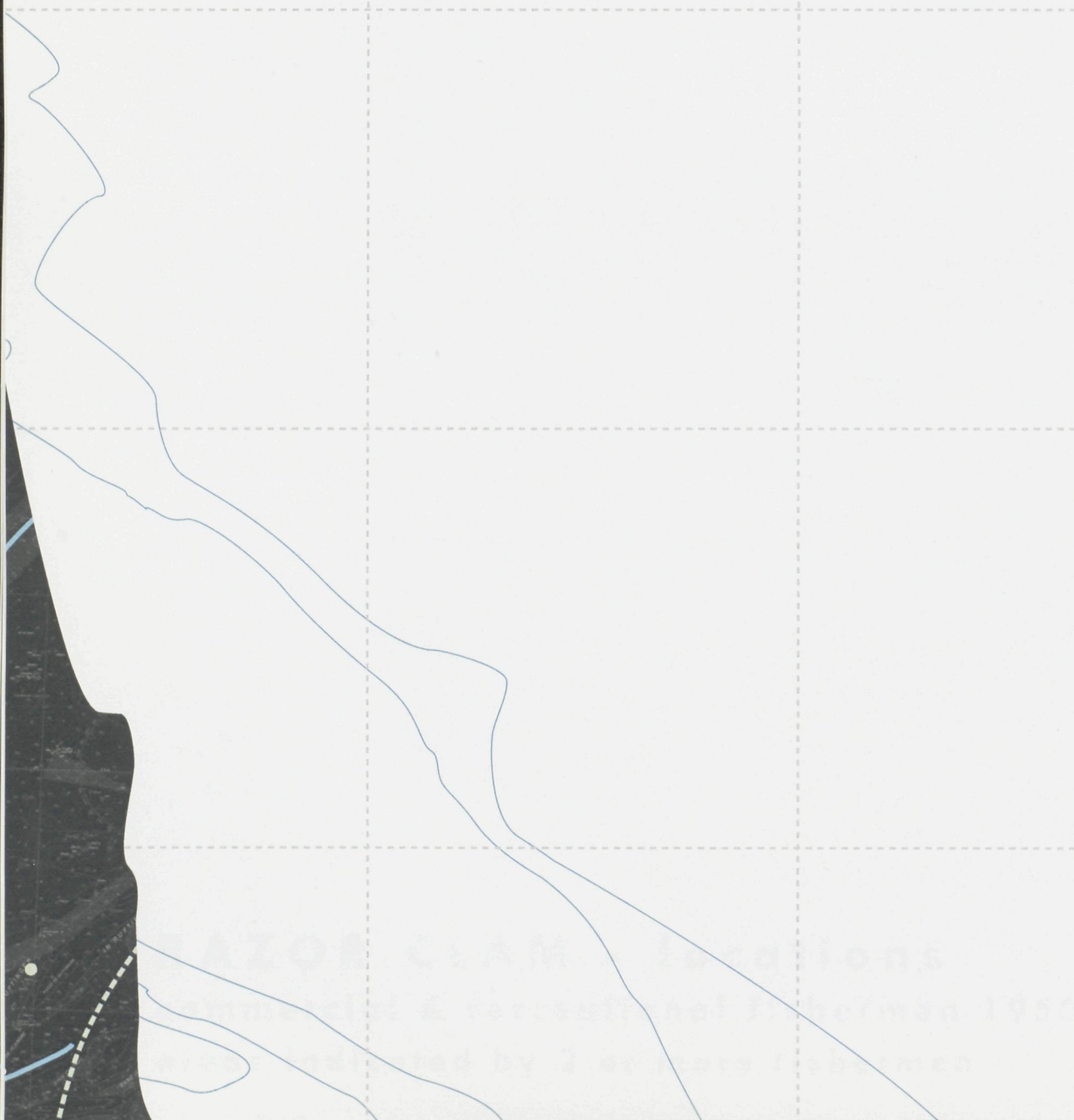
RAZOR CLAM - locations

commercial & recreational fishermen 1950 - 2010

areas indicated by 2 or more fishermen

MAPS SERIES X

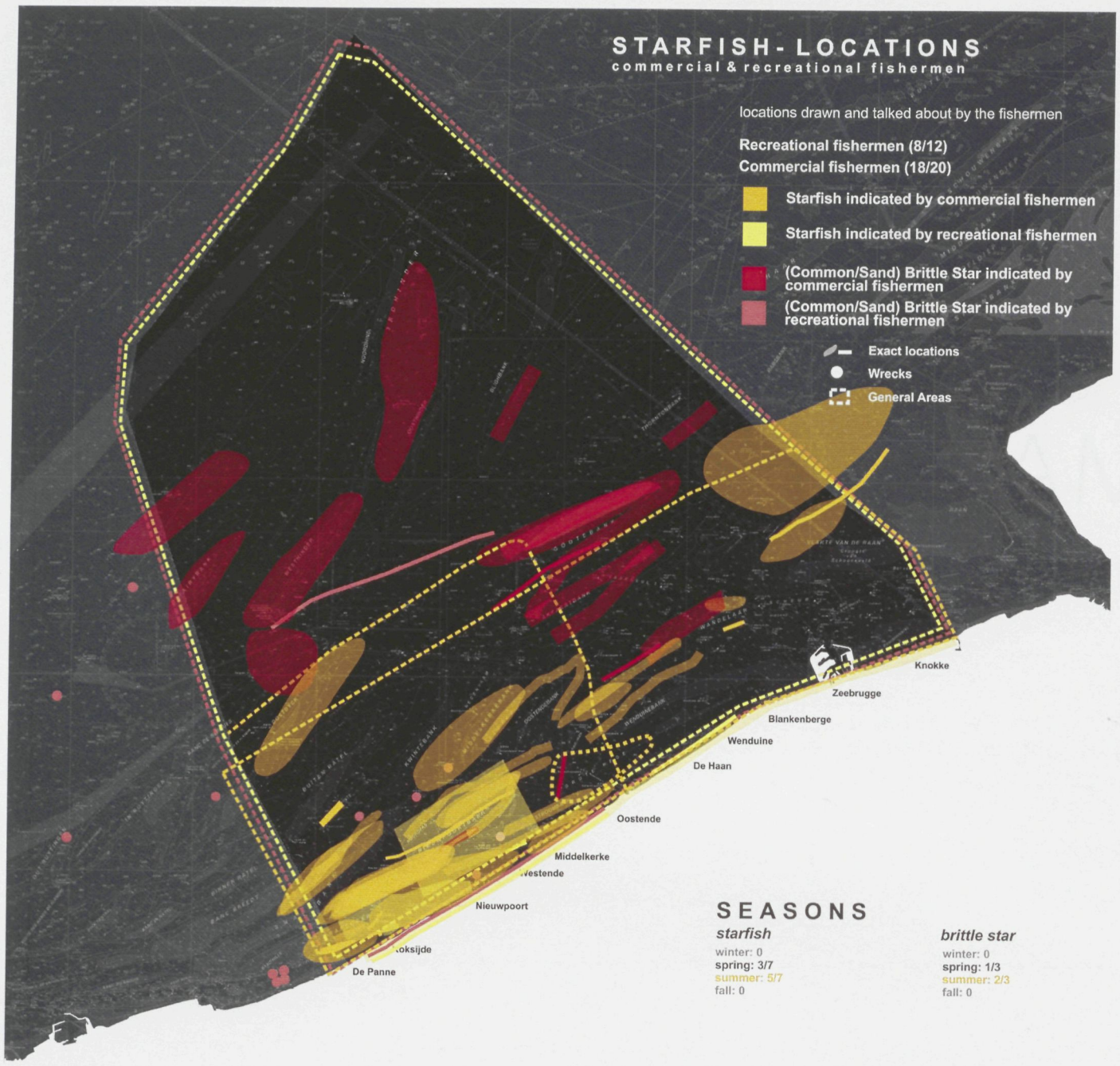
STARFISH



MAPS SERIES X

STARFISH

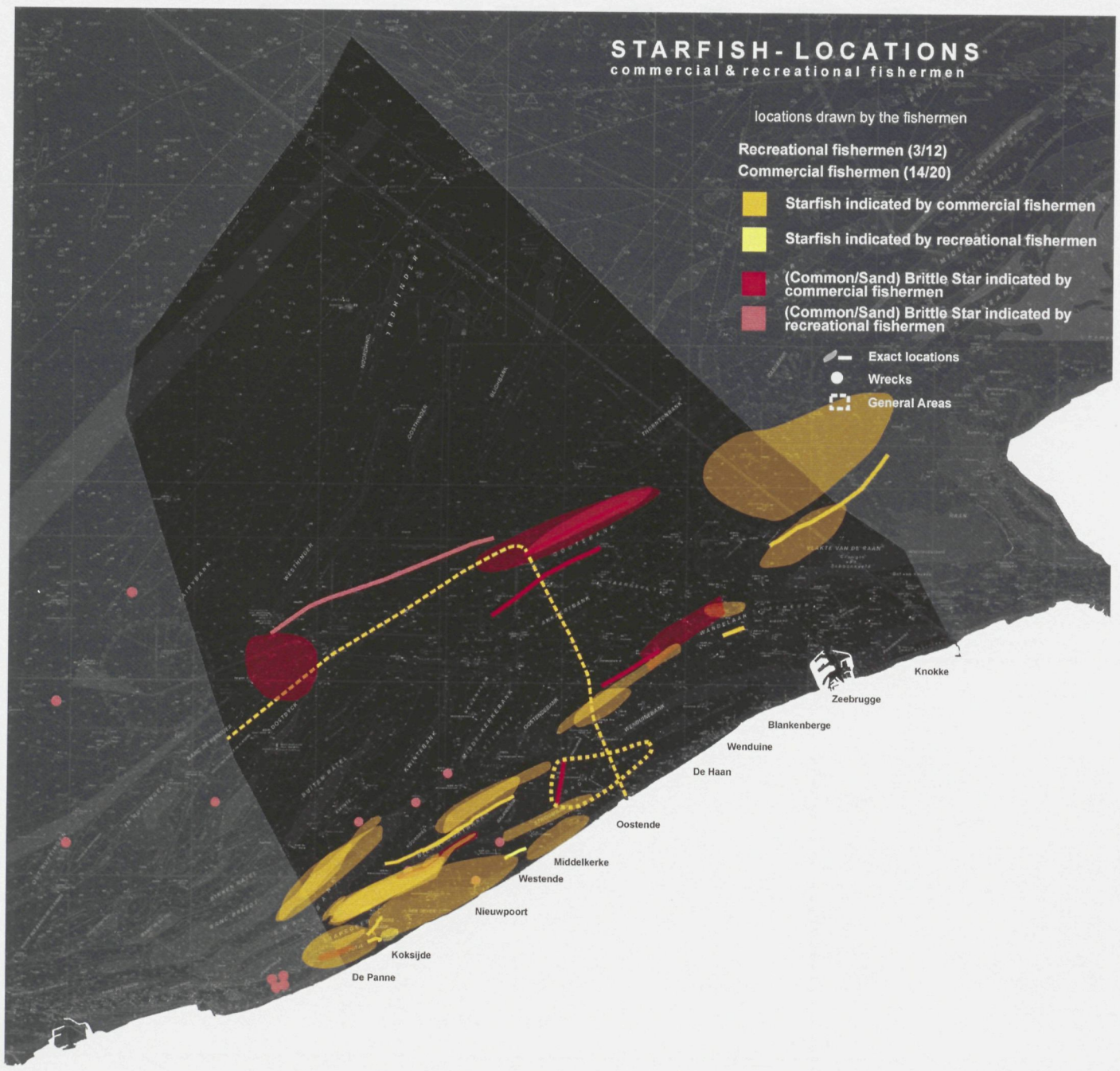




SEASONS

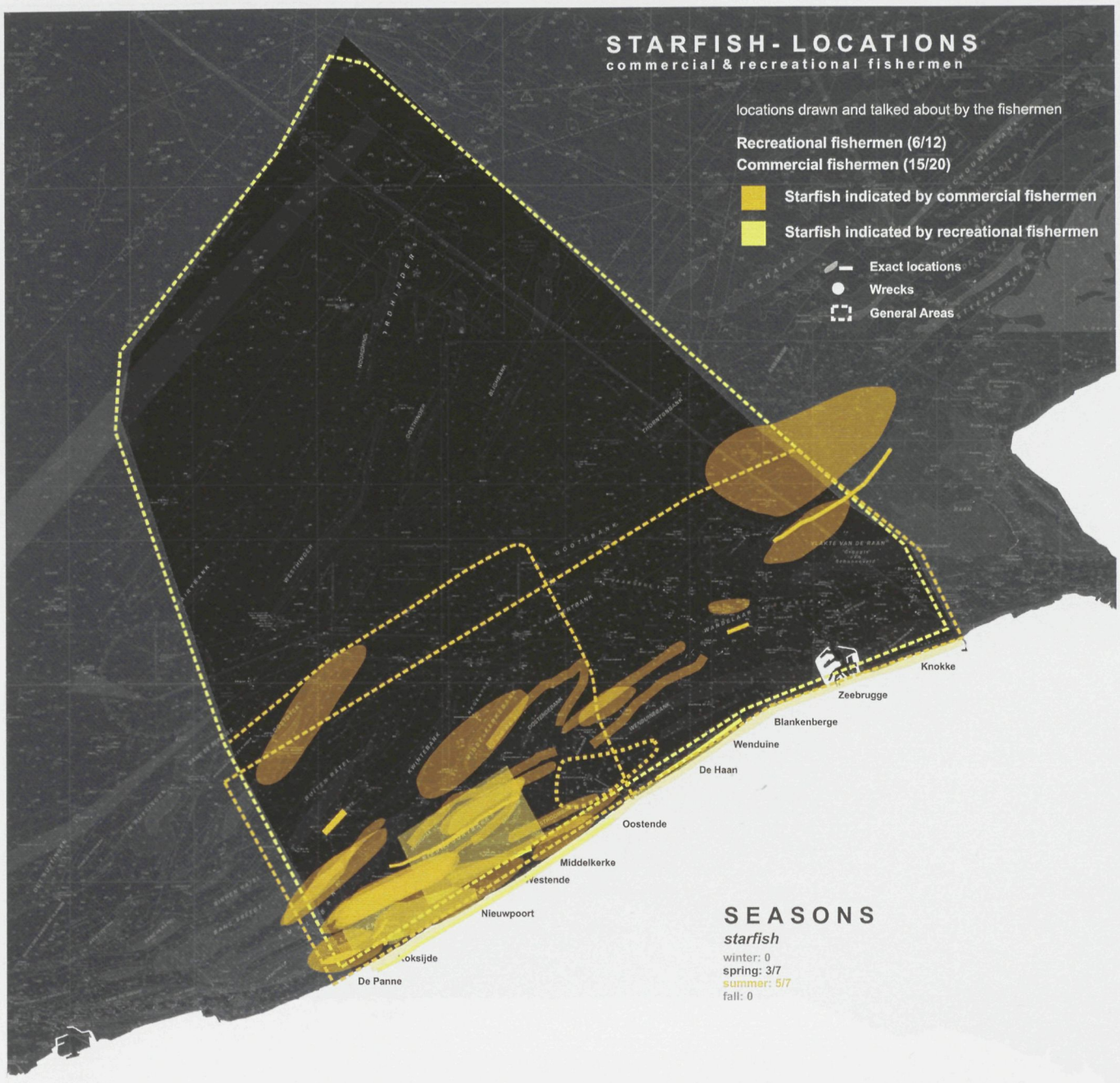
starfish
winter: 0
spring: 3/7
summer: 5/7
fall: 0

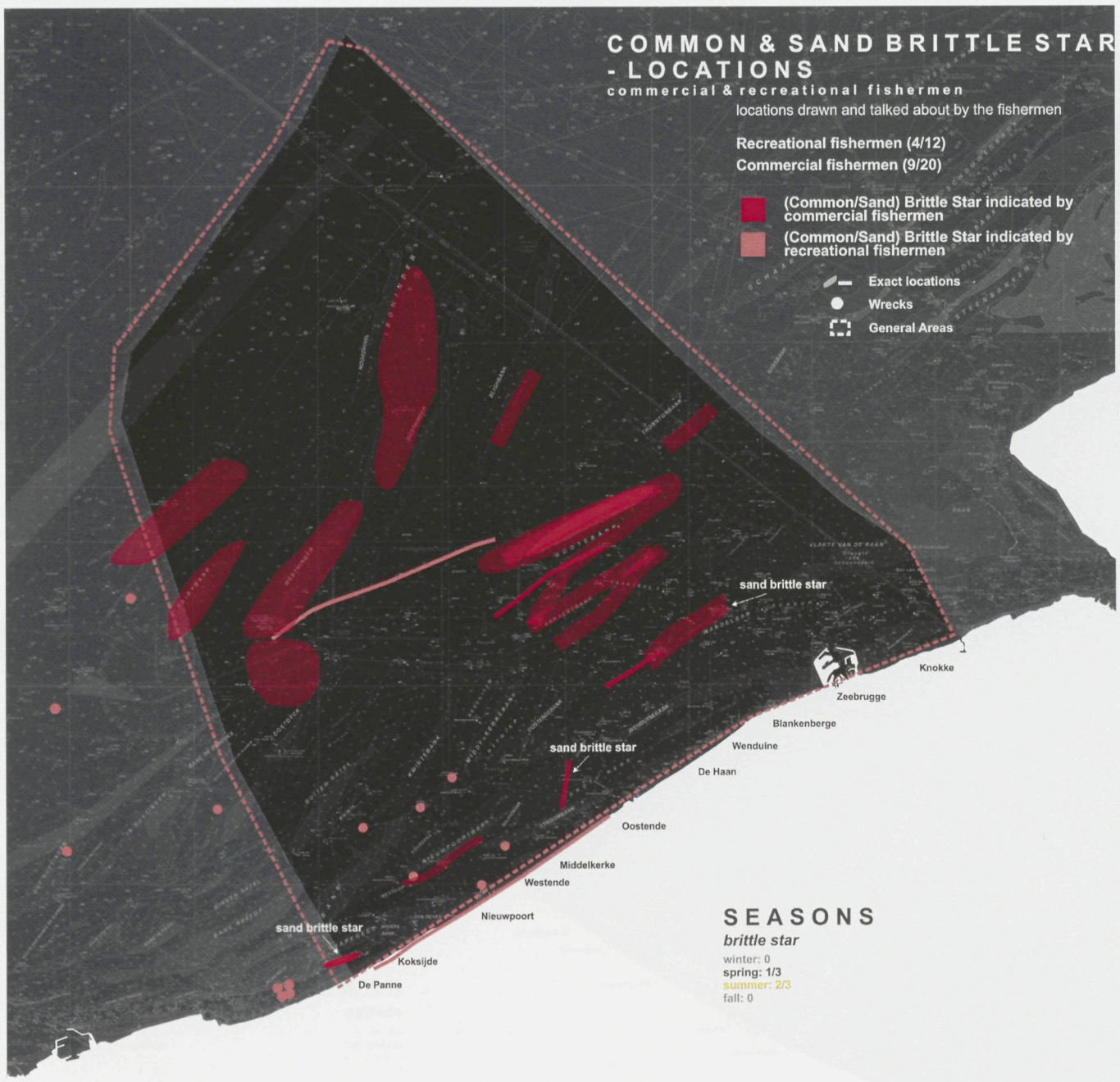
brittle star
winter: 0
spring: 1/3
summer: 2/3
fall: 0



STARFISH - locations drawn and talked about

commercial & recreational fishermen 1950 - 2010





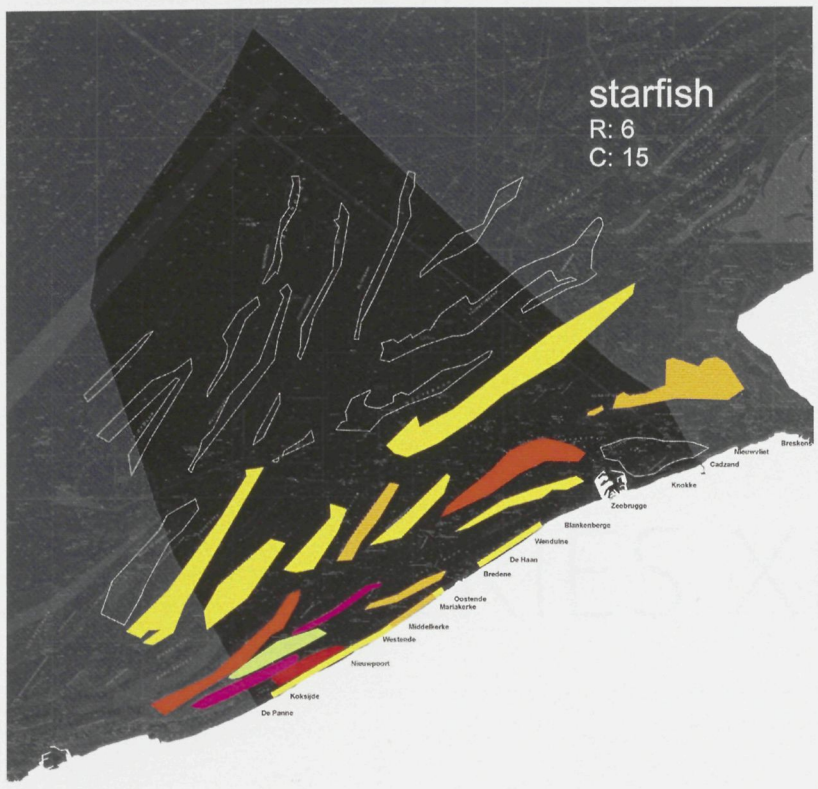
STARFISH - locations
starfish & common/sand brittle star
commercial & recreational fishermen 1950 - 2010





STARFISH - locations

commercial & recreational fishermen 1950 - 2010





STARFISH - LOCATIONS
commercial & recreational fishermen 1960-2010

banks / beach ports indicated by fishermen

number of fishermen on same bank/beach/port:

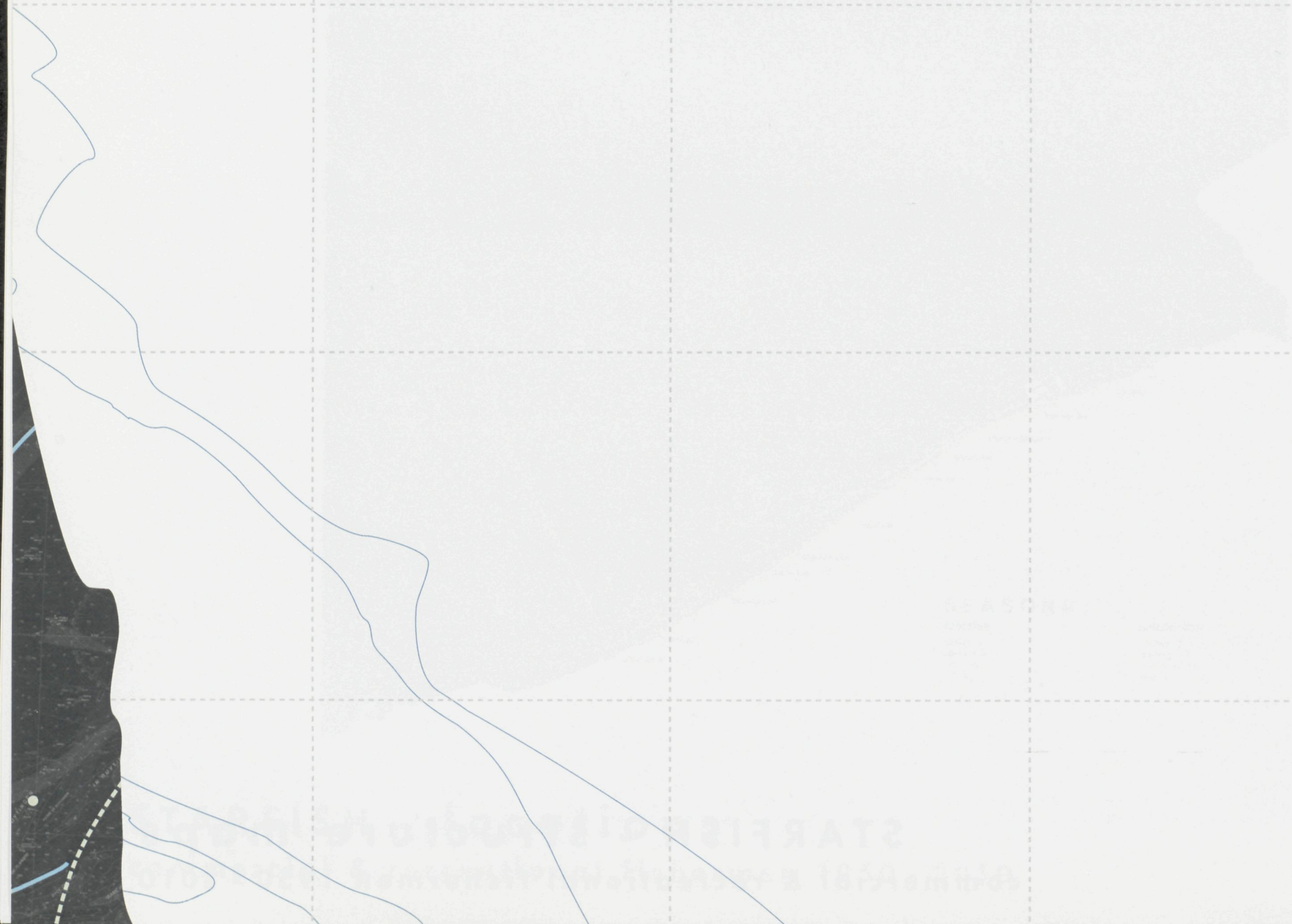
1
2
3
4
5
6
10

LECOFISH SEPTEMBER 2011

CRABS AND LOBSTERS

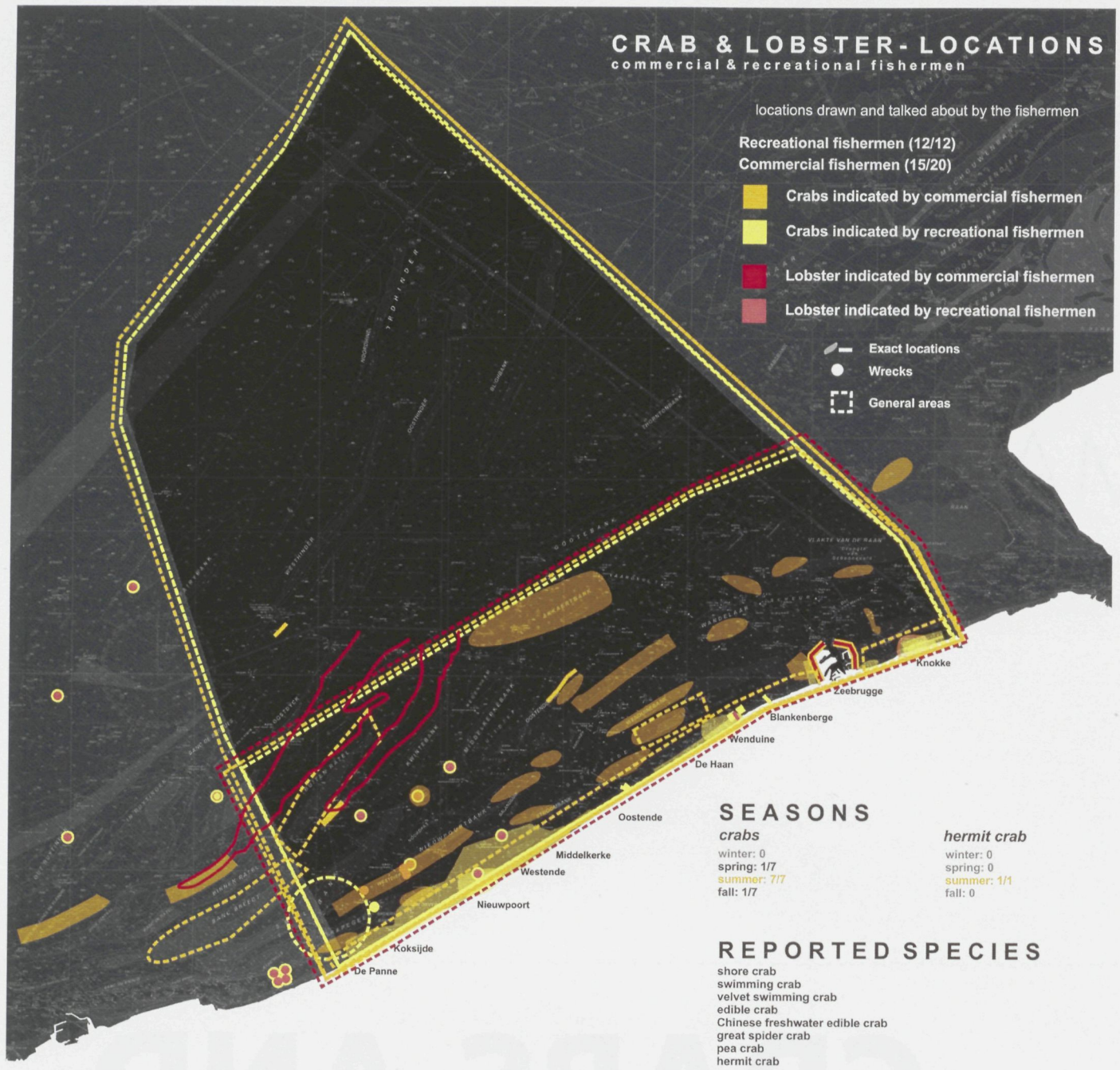
STARFISH - structure maps

commercial & recreational fishermen 1950 - 2010



MAPS SERIES XI

CRABS AND LOBSTERS

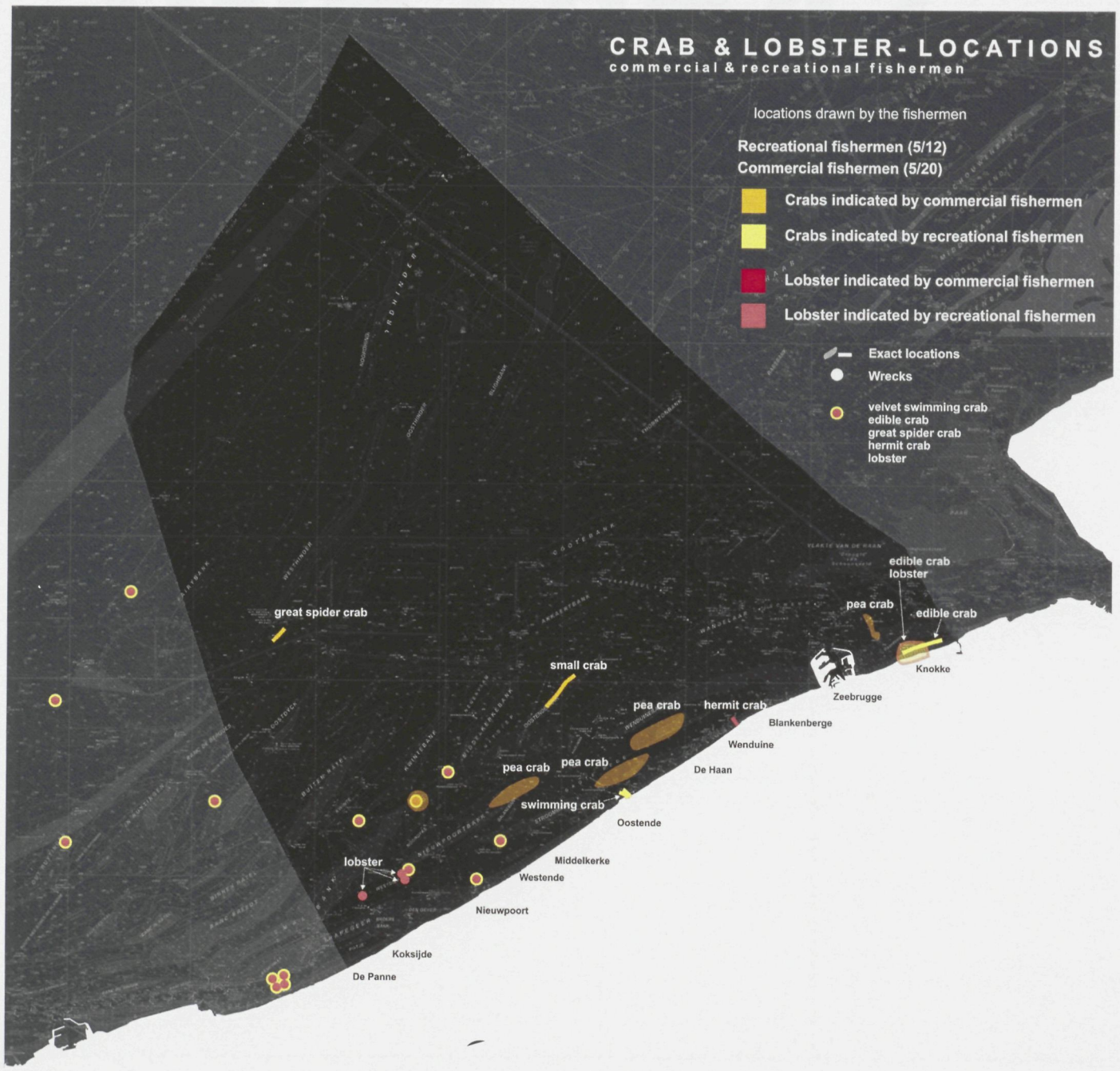


SEASONS

crabs	*hermit crab*
winter: 0	winter: 0
spring: 1/7	spring: 0
summer: 7/7	summer: 1/1
fall: 1/7	fall: 0

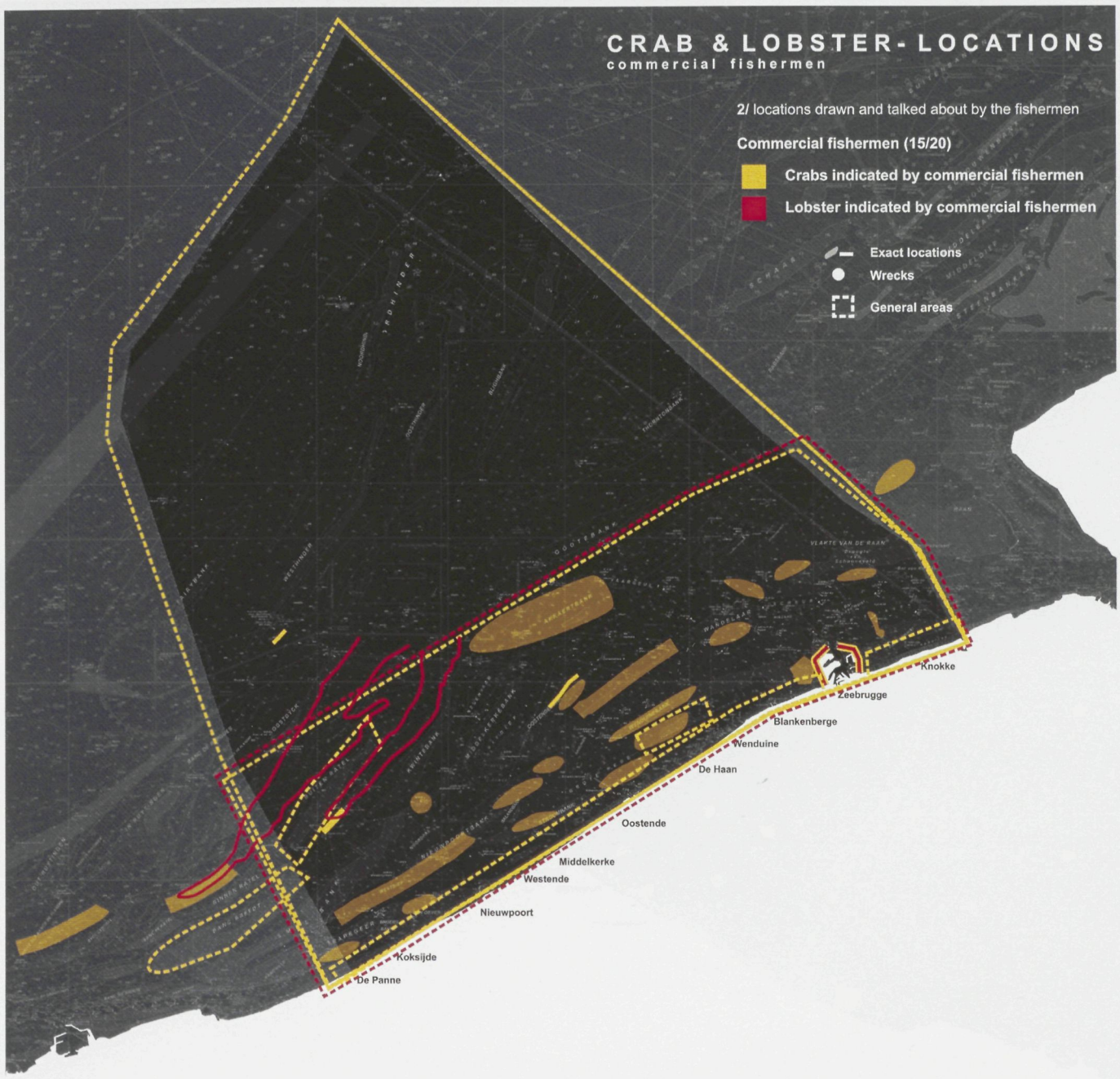
REPORTED SPECIES

shore crab
swimming crab
velvet swimming crab
edible crab
Chinese freshwater edible crab
great spider crab
pea crab
hermit crab



CRAB & LOBSTER - locations drawn and talked about

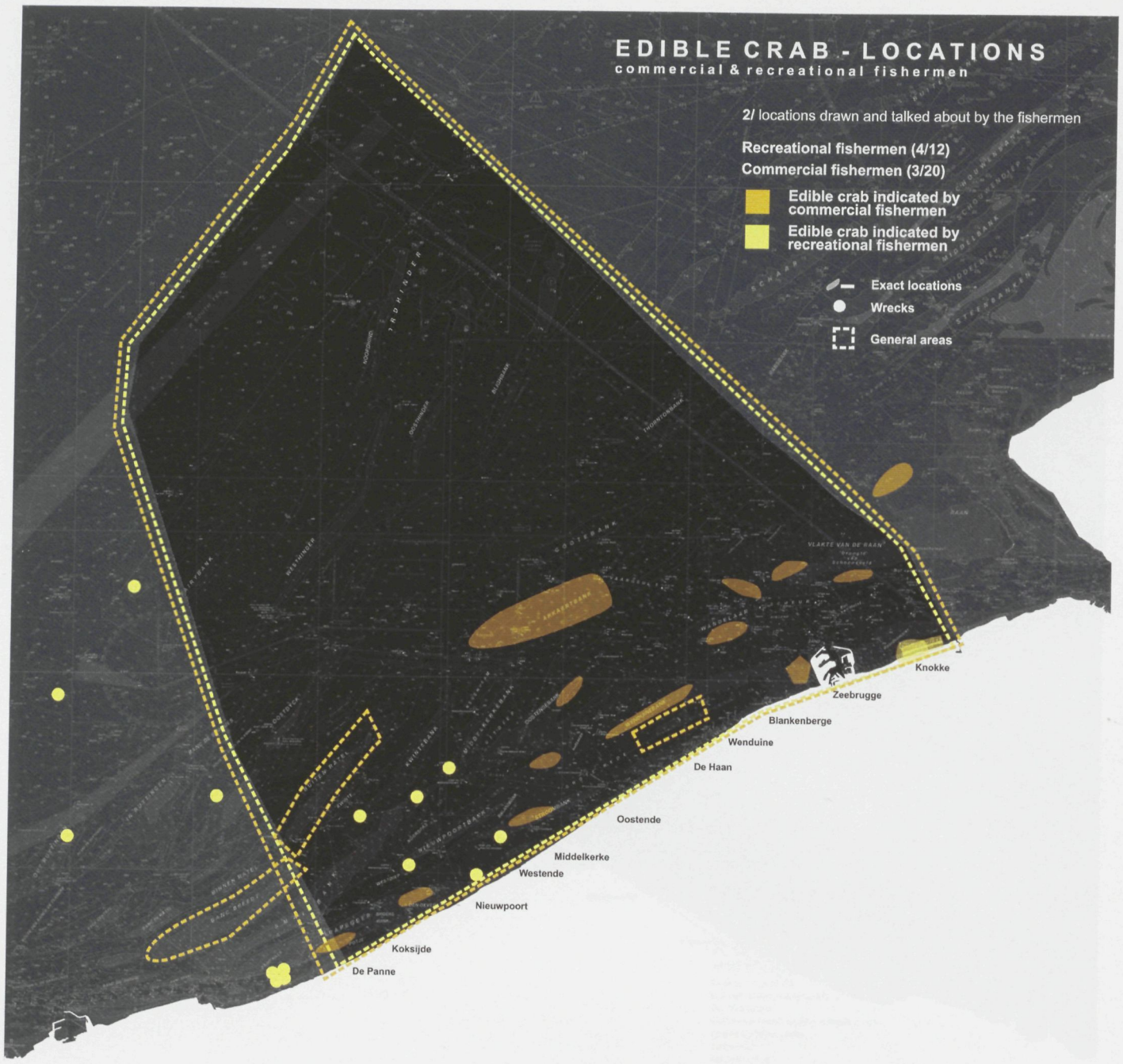
commercial & recreational fishermen 1950 - 2010

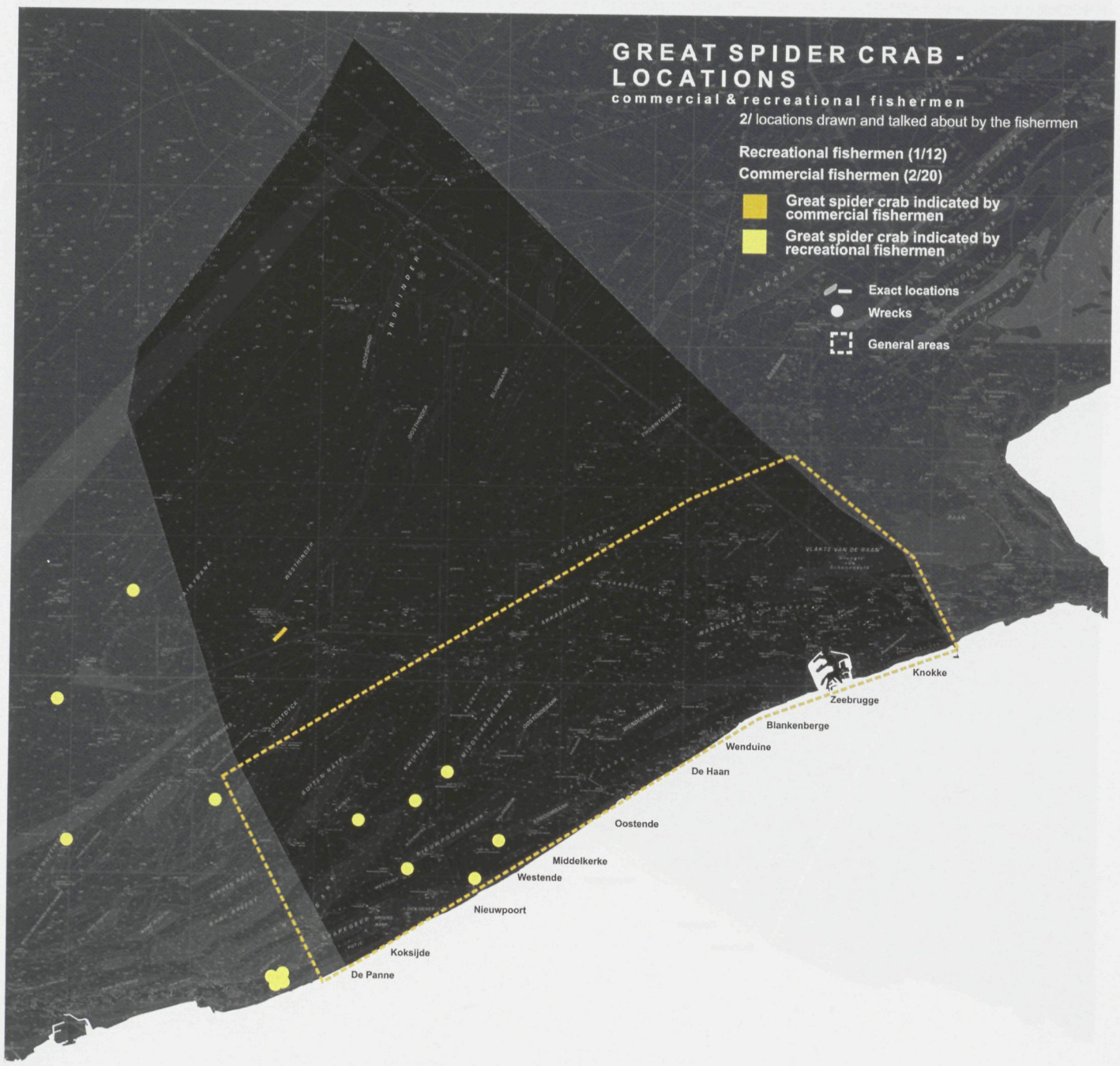




CRAB & LOBSTER - locations

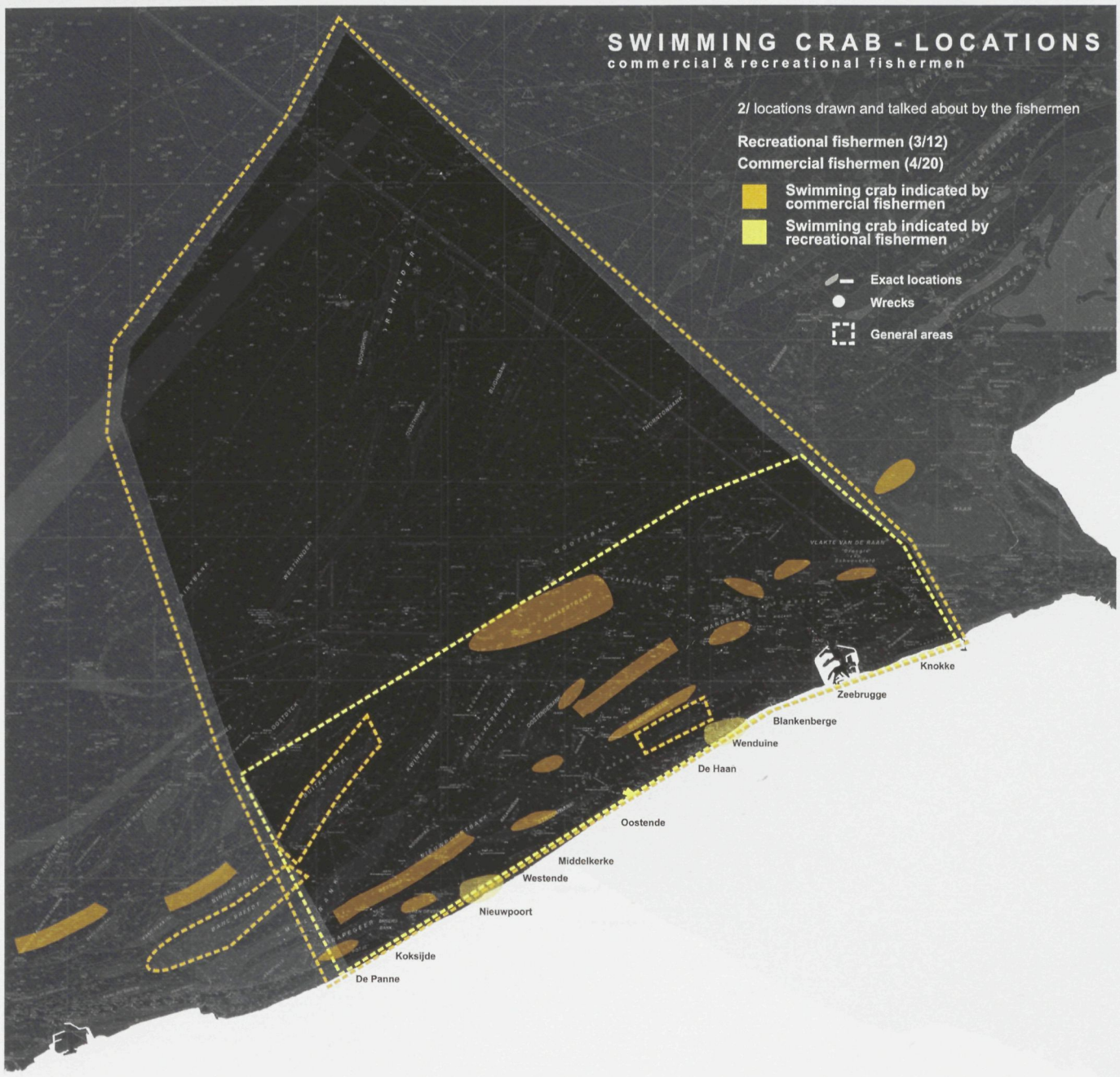
commercial & recreational fishermen 1950 - 2010

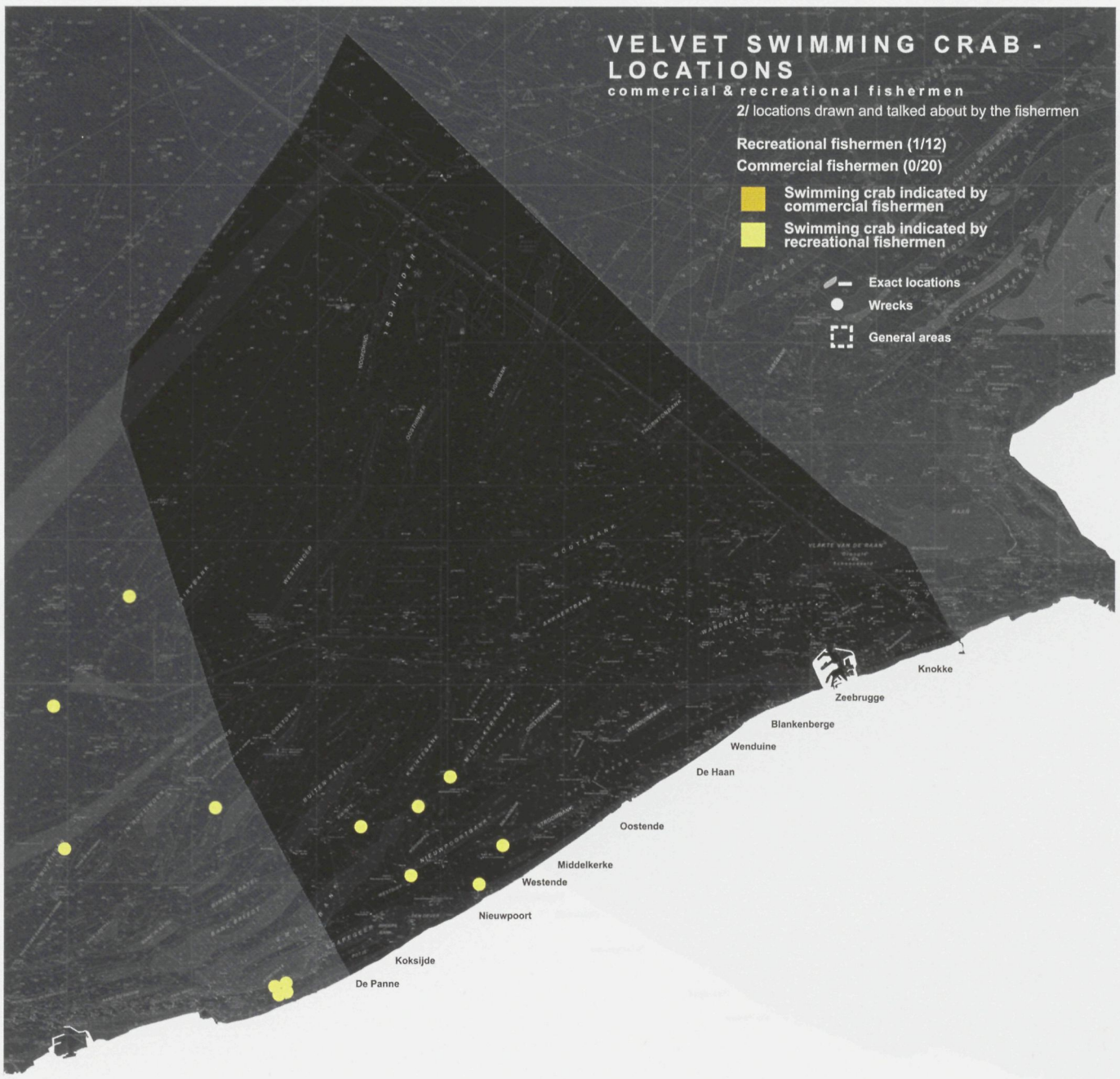




CRAB & LOBSTER - locations specific species

commercial & recreational fishermen 1950 - 2010

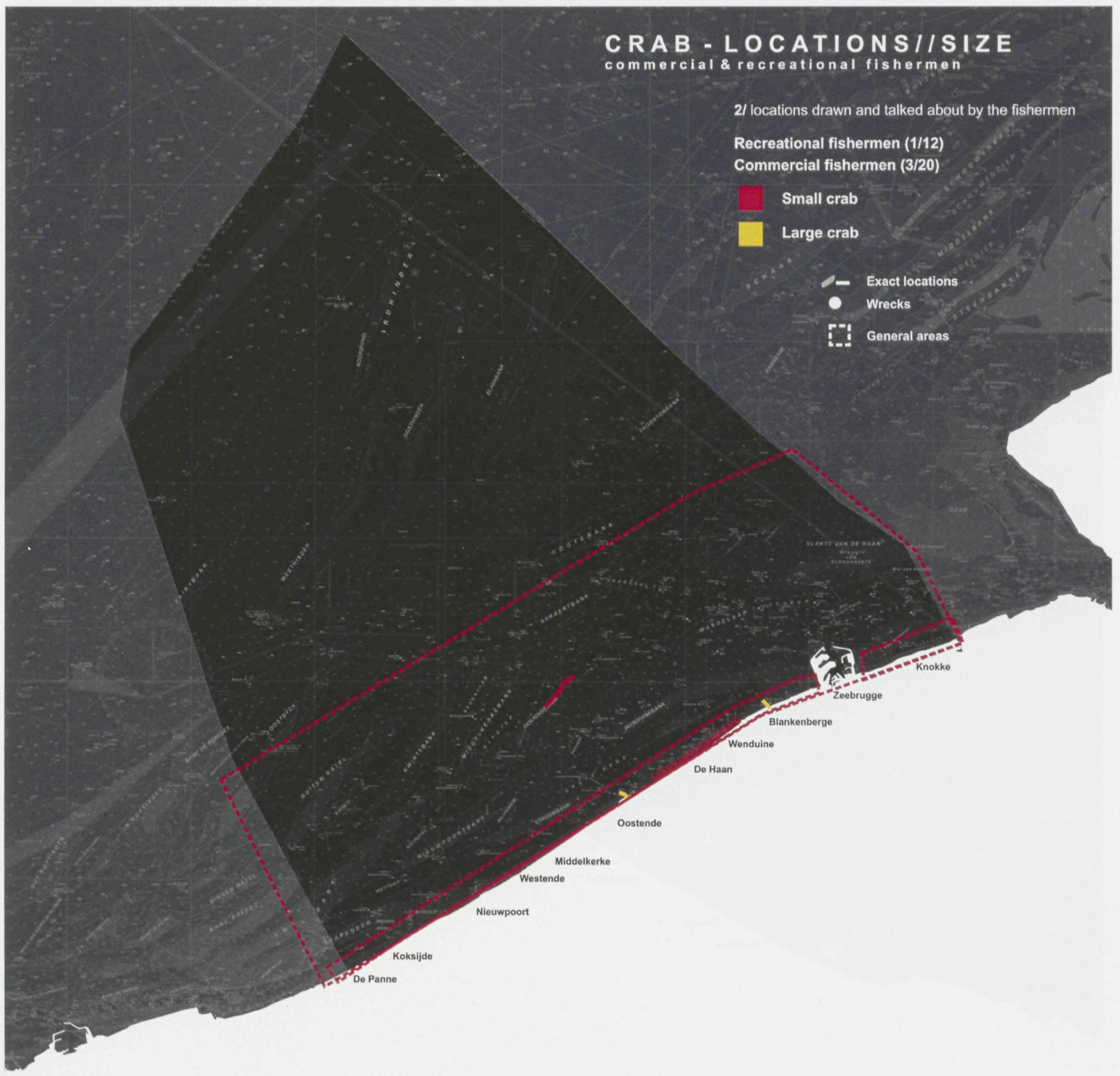




CRAB & LOBSTER - locations specific species

commercial & recreational fishermen 1950 - 2010

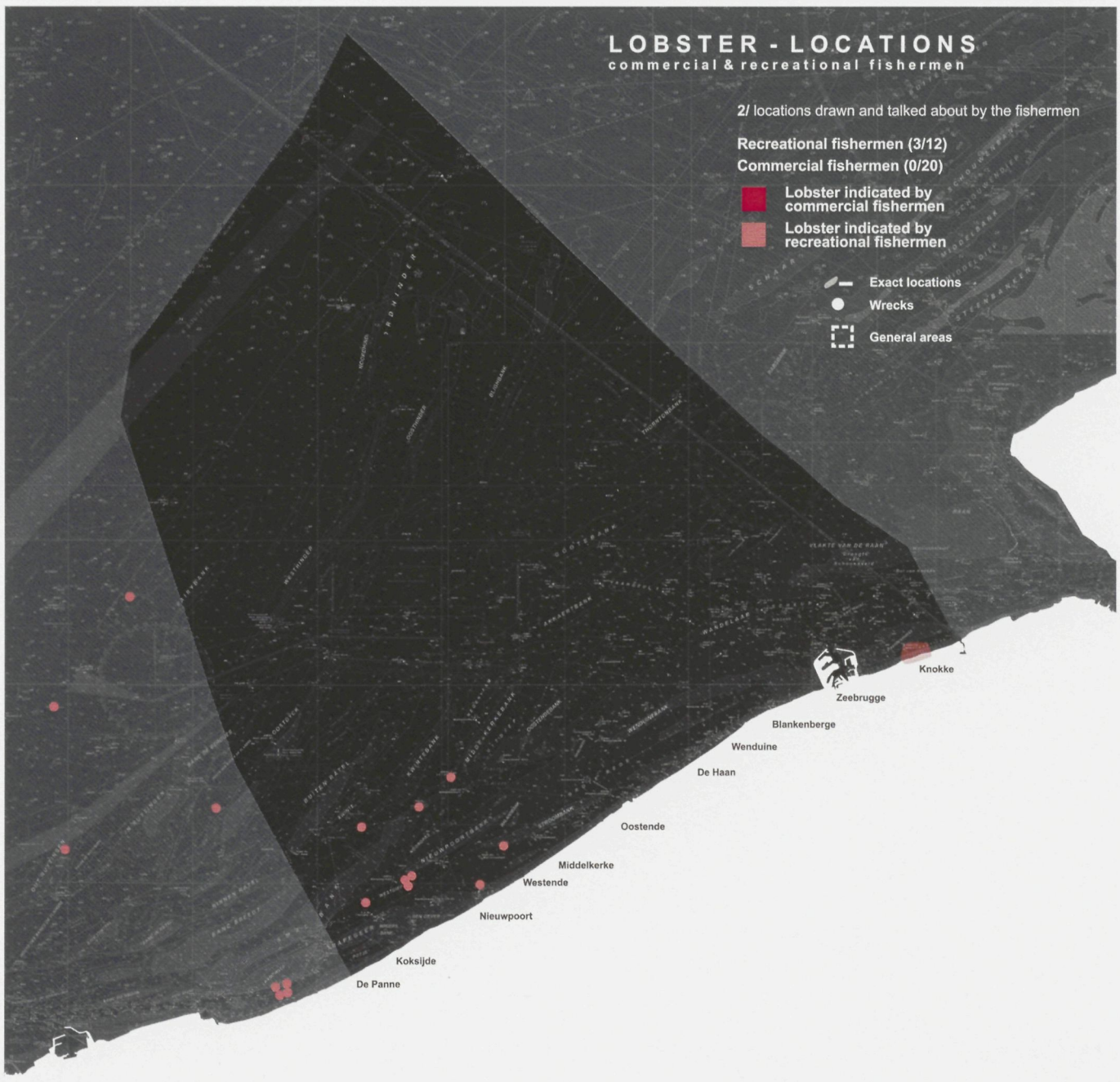




CRAB & LOBSTER - locations
specific species

commercial & recreational fishermen 1950 - 2010



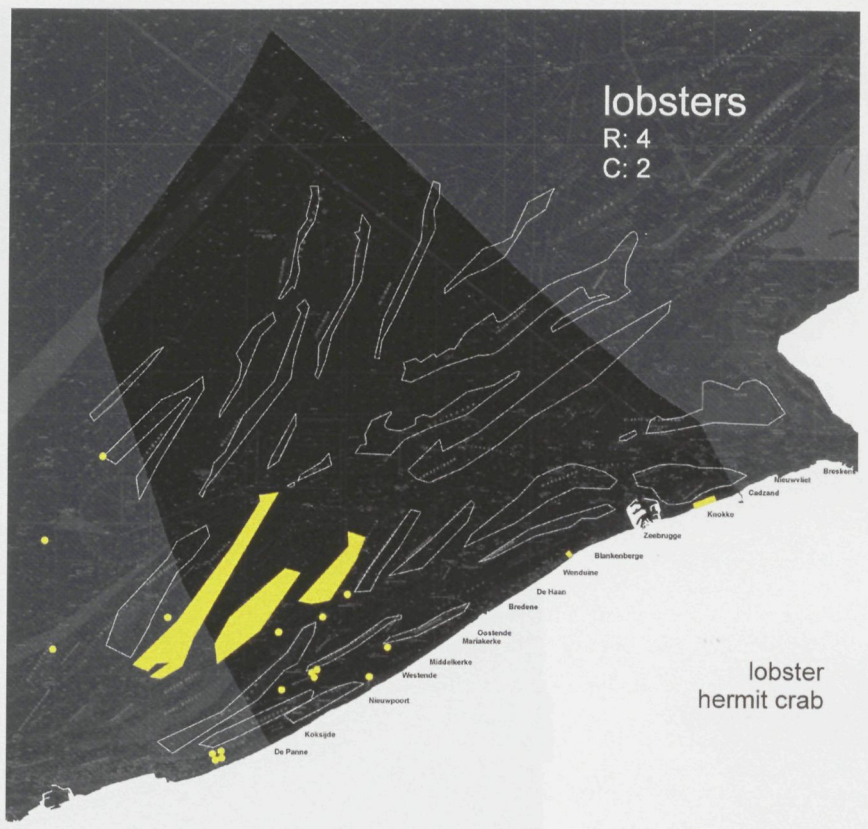


CRAB & LOBSTER - locations specific species

commercial & recreational fishermen 1950 - 2010



edible crab
swimming crab
velvet swimming crab
shore crab
Chinese freshwater edible crab
great spider crab
pea crab



lobster
hermit crab

CRAB & LOBSTER - LOCATIONS
commercial & recreational fishermen 1960-2010

banks / beach ports indicated by fishermen

number of fishermen on same bank/beach/port:

1
2
3
4

LECOFISH SEPTEMBER 2011

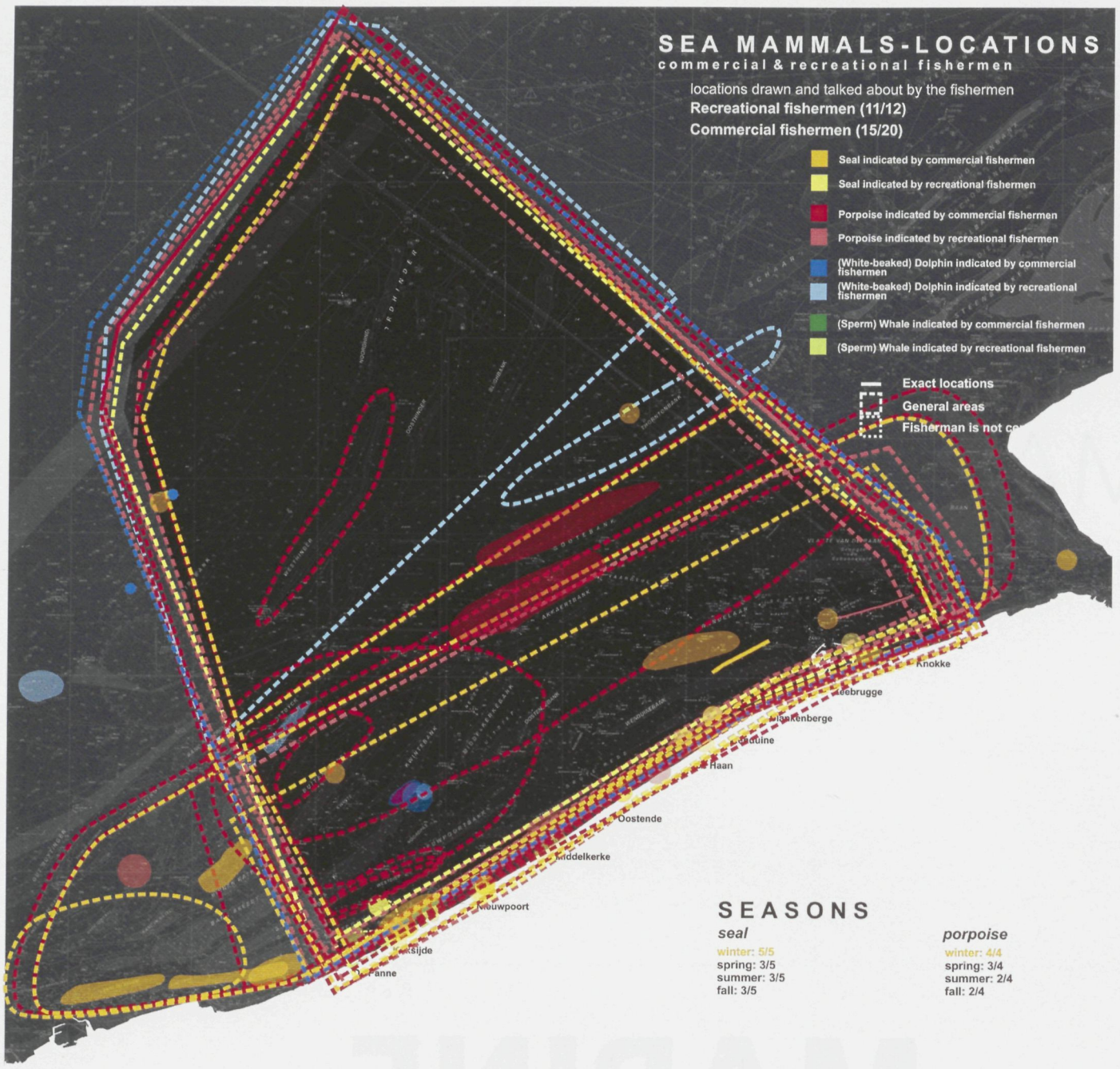
CRAB & LOBSTER - structure maps
commercial & recreational fishermen 1950 - 2010

MAPS SERIES XII

MARINE MAMMALS

MAPS SERIES XII

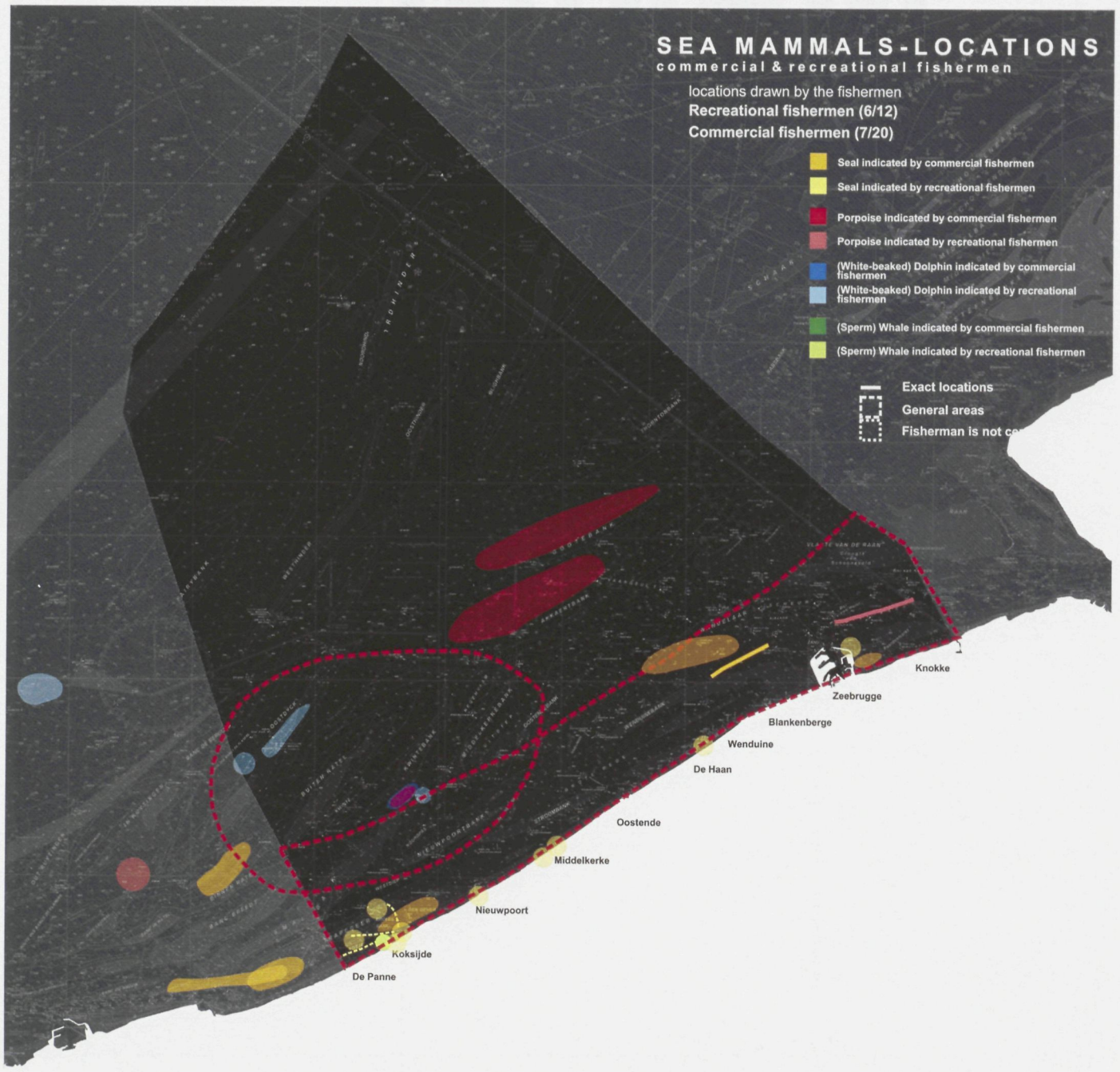
MARINE MAMMALS



SEASONS

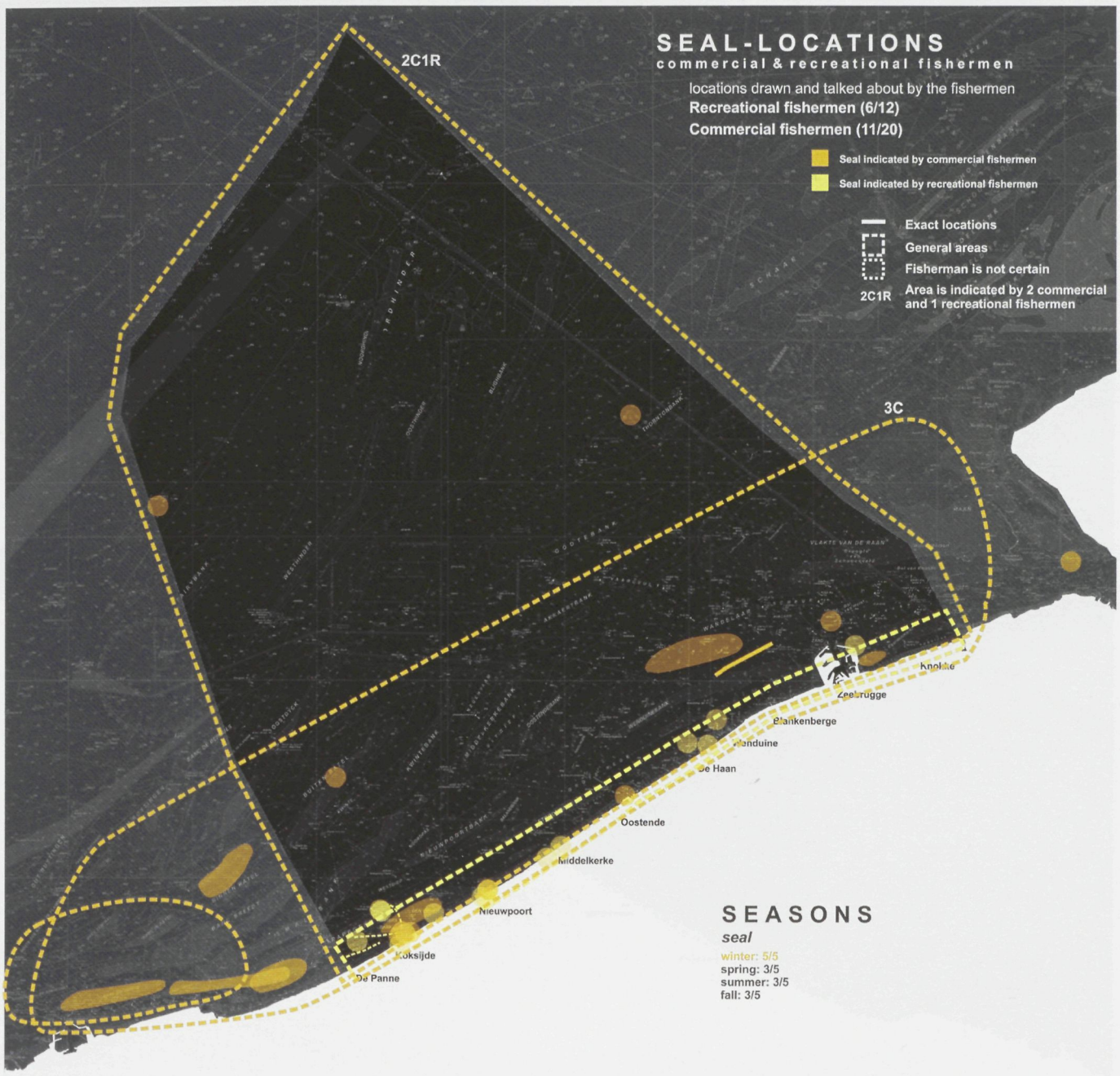
seal
winter: 5/5
spring: 3/5
summer: 3/5
fall: 3/5

porpoise
winter: 4/4
spring: 3/4
summer: 2/4
fall: 2/4



MARINE MAMMALS - locations drawn and talked about

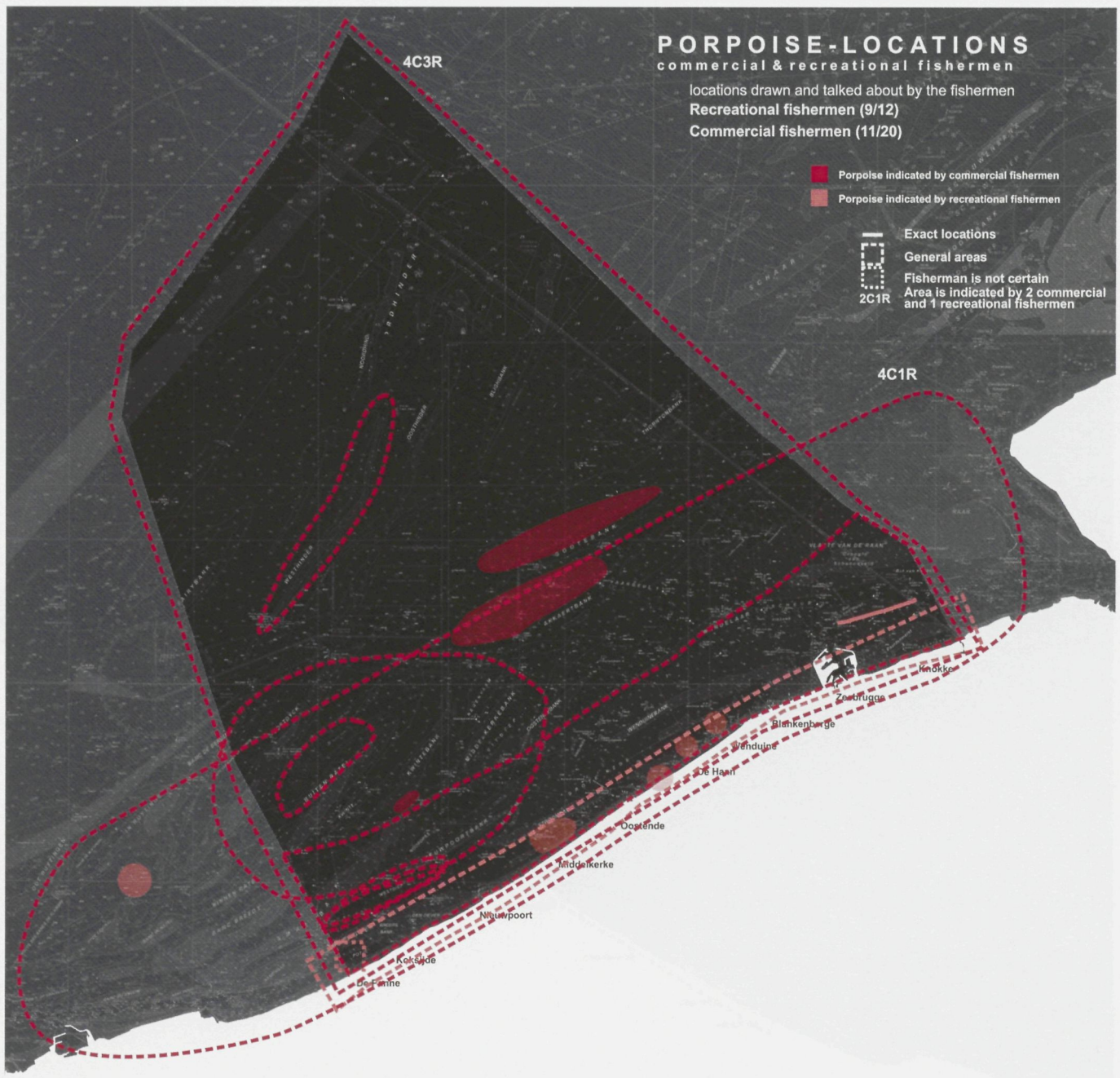
commercial & recreational fishermen 1950 - 2010



SEASONS

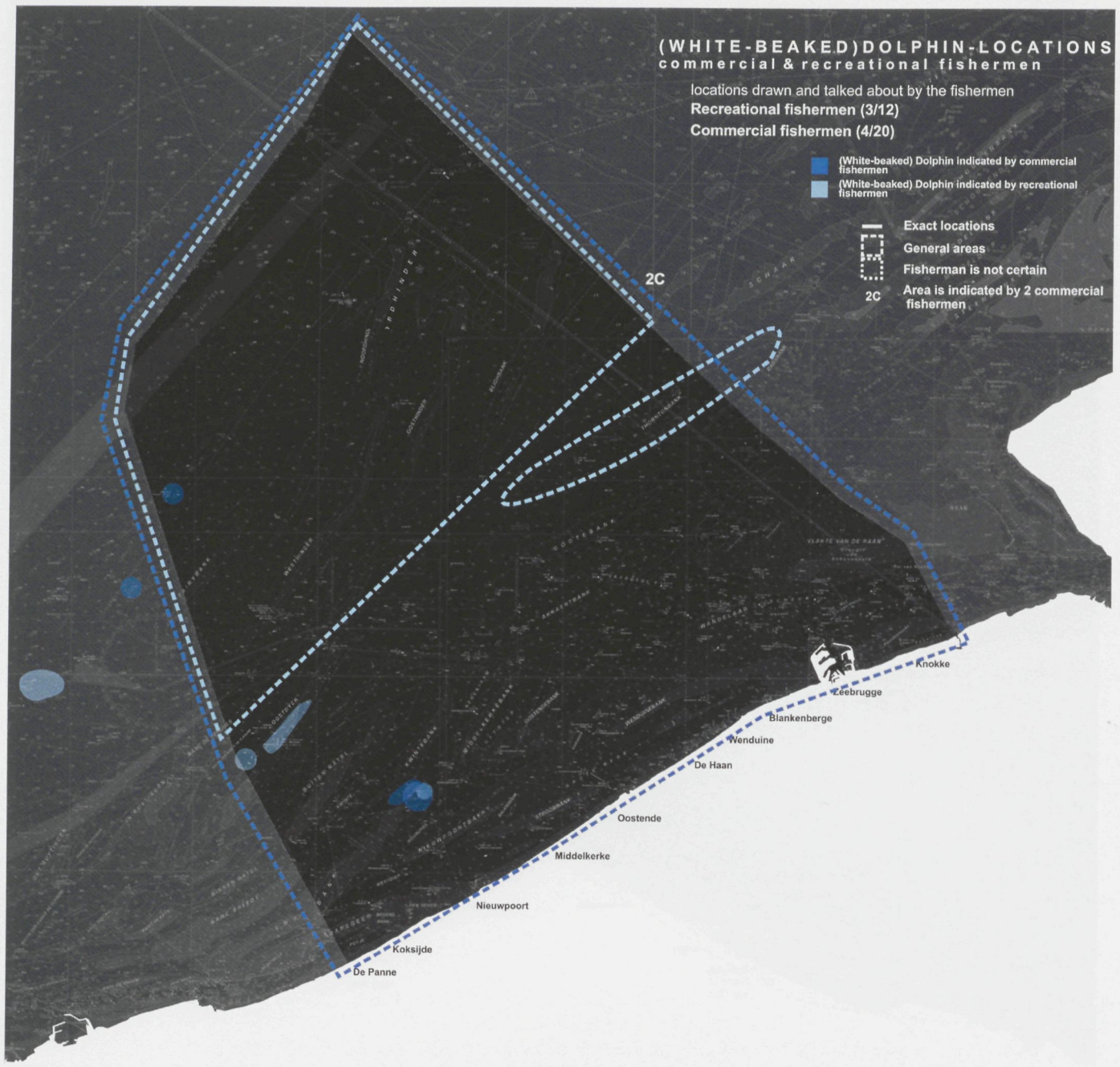
seal

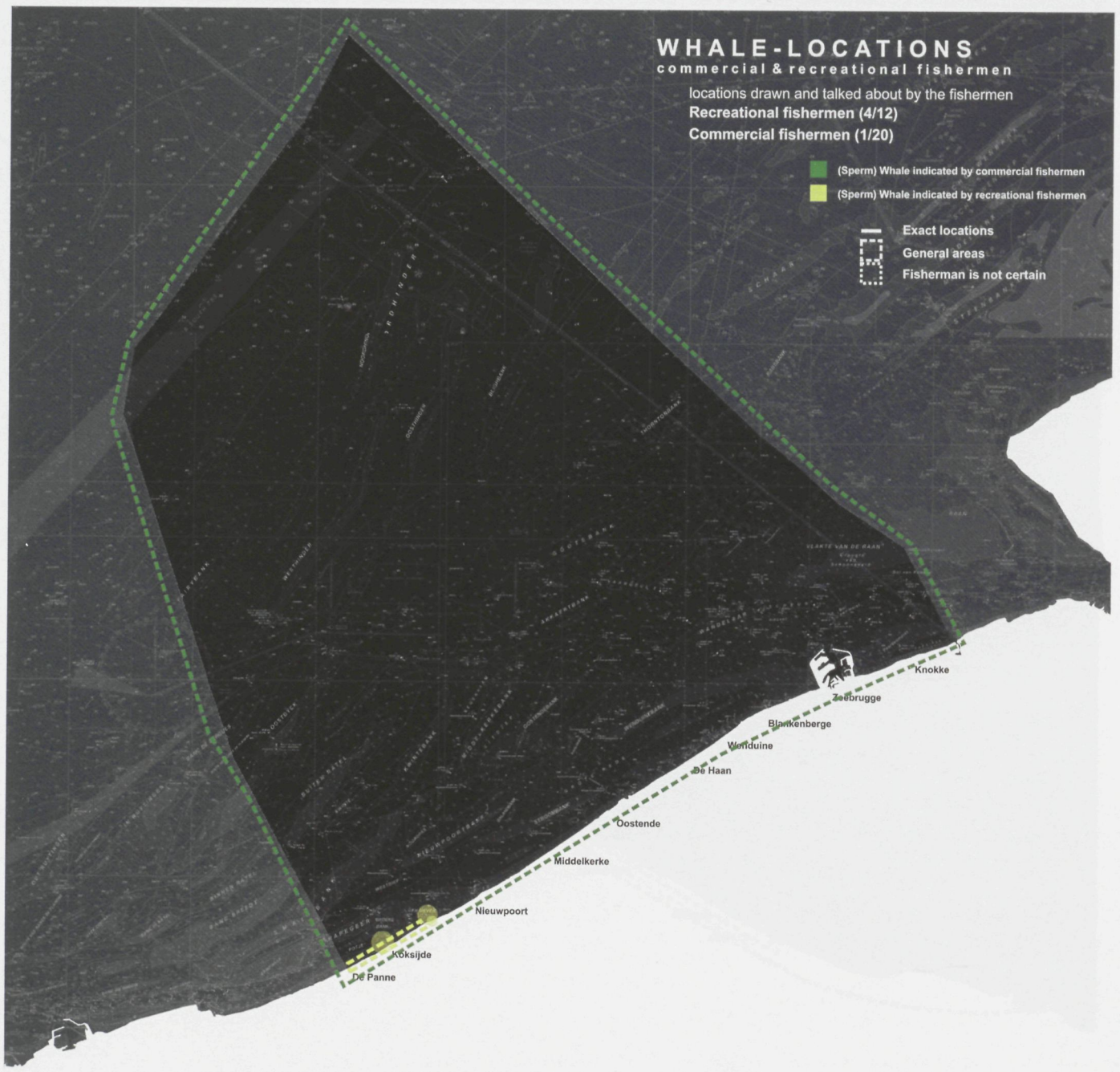
winter: 5/5
spring: 3/5
summer: 3/5
fall: 3/5



MARINE MAMMALS - locations specific species

commercial & recreational fishermen 1950 - 2010





MARINE MAMMALS - locations
specific species
commercial & recreational fishermen 1950 - 2010

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