

NOTE

Northern Pike *Esox lucius* L. with abnormal tri-lobed caudal fin

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Abstract

The author describes a case of an abnormal tri-lobed caudal fin in Northern Pike *Esox lucius* L. from UK waters and summarises previous reports of anatomical abnormalities in pike throughout its global range.

During 2014, Mr Andy Koczy captured an unusual specimen of Northern Pike *Esox lucius* L. on rod and line in a small river near Shifnal, Shropshire, UK. The specimen, which weighed c.900 g and measured c.49 cm TL, had an abnormal tri-lobed caudal fin (Figure 1). Radiographs revealed that the accessory caudal fin lobe was formed from extensions of the haemal spines emanating from the last six posterior vertebrae (Figure 2). The tri-lobed caudal fin section was donated to the National Museum of Ireland (NMINH:2015.25.1).

Although several different types of anatomical abnormalities have been reported in *E. lucius* throughout its global range (Table 1), the current report represents the first known documented case of a specimen with a tri-lobed caudal fin. The aetiology of this abnormality is uncertain; it could have been caused by adverse environmental conditions, possibly during an early stage of development, a genetic mutation, or physical damage. A number of authors observed the re-

generation of pseudo-caudal fins in wild-caught pike (Hofer, 1901) and following experimental fin excision (Wunder, 1943; Piwernetz, 1968). The current abnormality clearly had no apparent adverse effect on the specimen's ability to survive and grow in the wild.

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Figure 1. Abnormal tri-lobed caudal fin in Northern Pike *Esox lucius* L.

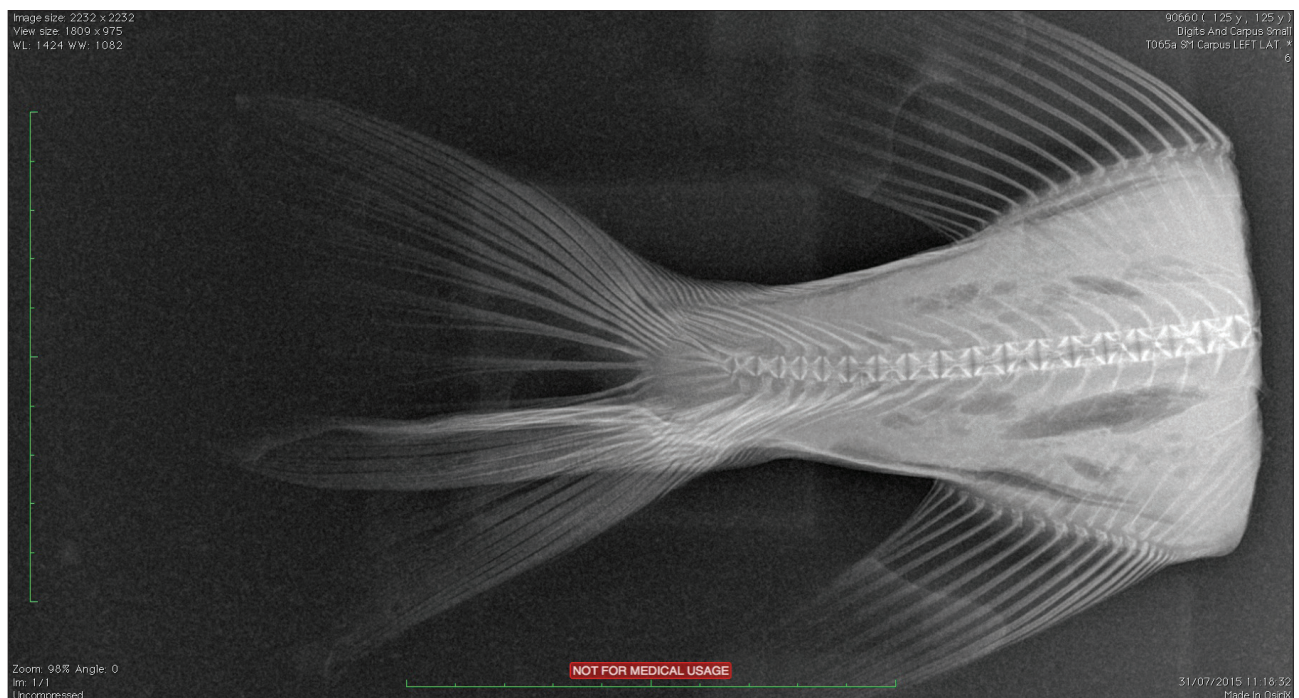


Figure 2. Radiograph of abnormal tri-lobed caudal fin in Northern Pike *Esox lucius* L.

Table 1. Summary of anatomical abnormalities recorded in Northern Pike *Esox lucius* L. throughout its global range.

Abnormality	References
Tri-lobed caudal fin	This paper
Double caudal fin	Anon (2002)
Natural regeneration of caudal fin	Hofer (1901)
Malformed caudal fin	Bettoni (1895); Steffens (1961); Wunder (1960, 1961)
Malformed dorsal fin	Wunder (1961)
Malformed pectoral fins	Steffens (1961); Wunder (1961)
Unilateral double pectoral fins and shoulder girdles	Wunder (1964)
Accessory fin on ventral surface between the pectoral and pelvic fins	Lawler (1966b)
Accessory fin on ventral surface of head	Lawler (1964)
Malformed pelvic fins	Steffens (1961); Wunder (1961)
Pelvic fins absent	Herbst (1957)
Malformed anal fin	Steffens (1961); Wunder (1960, 1961)
Abnormal skull (no specific details)	Poppius (1911)
Fore-shortened upper jaw ('Snub-Nosed' or 'Pug-Head')	Hopewell-Smith (1908); Brofeldt (1912); Toivonen (1950); Wunder (1960, 1961); Lawler (1966a); Skurdal (1981)
Fore-shortened operculum	Brofeldt (1912); Wunder (1961)
Spinal curvature	Bettoni (1895); Volodin (1960)
Compaction of vertebral column	Wunder (1949); Orska (1962)
Total fracture of spine and severing of the spinal cord with resulting paralysis	Wunder (1978)
Triple monster	Lereboullet (1863)
Double monster (twins)	Lereboullet (1864)

Rodger and Susie Mitchell (Vet Aqua International, Oranmore, Co Galway).

References

Anon (2002). Deformed pike. <http://forum.fishingwarehouse.co.uk/ubbthreads/>

ubbthreads.php/topics/126415/Deformed_pike.

Bettoni E (1895). Casi di emiteria presentati dal luccio. *Rendiconti dell' Istituto lombardo di scienze e lettere, Milano* (Series 2) **28**(18), 1012-1017.

- Brofeldt P (1912). Epamuodostuneista hauenpaista. *Meddelanden af Societas pro Flora et Fauna Fennica, Helsingfors* **38**, 13-16
- Canestrini R (1883). Nota sui pesci mostruosi. Atti della Società Veneto-Trentino di Scienze Naturali Residente in Padova. *Padua* **9**, 117-125.
- Herbst HO (1957). Bauchflossenlose Hechte. *Gewässer und Abwässer, Dusseldorf* **8**, 77.
- Hofer B (1901). Über mißbildungen beim Hecht. *Allgemeine Fischereizeitung* **26**(1), 14-15.
- Hopewell-Smith A (1908). Two specimens of the head and jaws of the adult *Hemiramphus*; (2) Developmental defects occurring in the upper jaw of a pike (*Esox lucius*). *Proceedings of the Royal Society of Medicine, London* **1**, 61-62.
- Lawler GH (1964). A Northern Pike, *Esox lucius*, with an accessory fin. *Journal of the Fisheries Research Board of Canada* **21**(6), 1547.
- Lawler GH (1966a). Pugheadedness in perch, *Perca flavescens*, and pike, *Esox lucius*, of Heming Lake, Manitoba. *Journal of the Fisheries Research Board of Canada* **23**(11), 1807-1808.
- Lawler GH (1966b). A second record of an accessory fin on *Esox lucius*. *Journal of the Fisheries Research Board of Canada* **23**(12), 1969.
- Lereboullet M (1863). Sur les monstruosités du brochet. *Annales des Sciences Naturelles, Paris* **20**, 177-271.
- Lereboullet M (1864). Sur les monstruosités du brochet. *Annales des Sciences Naturelles, Paris* **1**, 113-199, 257-320.
- Orska J (1962). Anomalie kregoslupow u szczupaka (*Esox lucius* L.) - Anomalies in the vertebral columns of the pike (*Esox lucius* L.). *Acta Biologica Cracoviensia* **5A**(2), 327-345.
- Piwernetz D (1968). Regeneration und mißbildung bei verletzung embryonaler flosseanlagen bei Hechtlarven (*Esox lucius* L.). *Zeitschrift für Fischerei und deren Hilfswissenschaften* **16**(3-4), 279-300.
- Poppius B (1911). Übersicht der wichtigeren mitteilungen 1910-1911. Pisces. Vermischte Notizen. *Esox lucius* mit abnormen schadel. *Meddelanden af Societas pro Flora et Fauna Fennica, Helsingfors* **37**(53), 217.
- Skurdal J (1981). A snub-nosed pike caught in Lake Tyrifjorden. *Fauna (Blindern)* **34**(2), 87.
- Steffens W (1961). Flossenschädigungen beim Hecht (*Esox lucius*). *Biologisches Zentralblatt, Leipzig* **80**(1), 79-84.
- Toivonen S (1950). Ein fall von unterkopfmißbildung beim Hecht, *Esox lucius* L. *Archivum Societatis Zoologicae-Botanicae Fennicae 'Vanamo', Helsinki*. **4**, 115-117.
- Volodin VM (1960). Effect of temperature on the embryonic development of the pike, the blur bream (*Abramis ballerus* L.) and the white bream (*Blicca bjoerkna*). *Trudy Instituta Biologii Vodokhranilishch, Akademiya nauk, SSSR, Moskow* **3**, 231-237.
- Wunder W (1943). Versuche über die regeneration des schwanzes beim Hecht (*Esox lucius* L.). *Wilhelm Roux' Archiv für Entwicklungsmechanik der Organismen* **142**, 183-199.
- Wunder W (1949). Ein fall von wirbelsäulenverkürzung beim Hecht (*Esox lucius* L.). *Archiv für Hydrobiologie, Stuttgart* **42**, 470-473.
- Wunder W (1960). Mißbildung bei kleinen Hechten. *Fischwirt* **10**(2), 35-40.
- Wunder W (1961). Massenhaftes auftreten von mißbildungen bei kleinen Hechten (*Esox lucius* L.). *Zoologischer Anzeiger, Leipzig* **166**(1-2), 42-45.
- Wunder W (1964). Doppelbildung der brustflosse und des schultergürtels auf einer seite nach einer schnittverletzung beim Hecht (*Esox lucius* L.). *Wilhelm Roux' Archiv für Entwicklungsmechanik der Organismen* **155**(1), 1-8.
- Wunder W (1978). Ein Hecht (*Esox lucius* L.) mit

vollkommener bruch der wirbelsaule und
querschnittslahmung des ruckenmarks.
Archiv für Hydrobiologie, Stuttgart **84**, 247-
255.