ROCKET with Fins

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The wahoo is a unique fish and holds a special place in gamefishing circles around the world. A respected adversary, widely reputed to be the fastest fish that swims – and great on the table to boot, its life story still holds many secrets. Dr Julian Pepperell delves into the biology of the enigmatic wahoo.

"POPULATIONS OF WAHOO TEND TO BE HIGHEST IN THE WESTERN REGIONS OF EACH OF THE THREE MAJOR OCEANS."

Whenever I mention wahoo to non-fishing friends, they always have a chuckle about the name. I have to admit that 'wahoo' sounds more like a rodeo cry than a fish, and could easily have been coined by the first person who hooked one! The true origin of the name is a little obscure, with perhaps the best explanation being that early European voyagers, including Captain James Cook, may have first come across the species in the Hawaiian islands, the main island of which was, and still is, called Oahu (pronounced o-wa-hoo). In fact, old maps of Hawaii often used the spelling 'wahoo' for this island. Ironically, however, the Hawaiians themselves don't use this name – the local name for wahoo being 'ono', which means sweet, or good to eat. Interestingly, there are two other possible derivations of the name that I have come across. One suggests it may have come from the North American Indian word 'wanhu' meaning 'burning bush', while another suggests a Portugese/Brazilian name for the species, 'guarapucu', meaning long fish. The wahoo's scientific name, *Acanthocybium solandri*, translates roughly as 'Solander's thorny tuna', no doubt referring to the wahoo's sharp teeth. (Solander was a biologist on Cook's voyage to Australia.)

DISTINGUISHING FEATURES

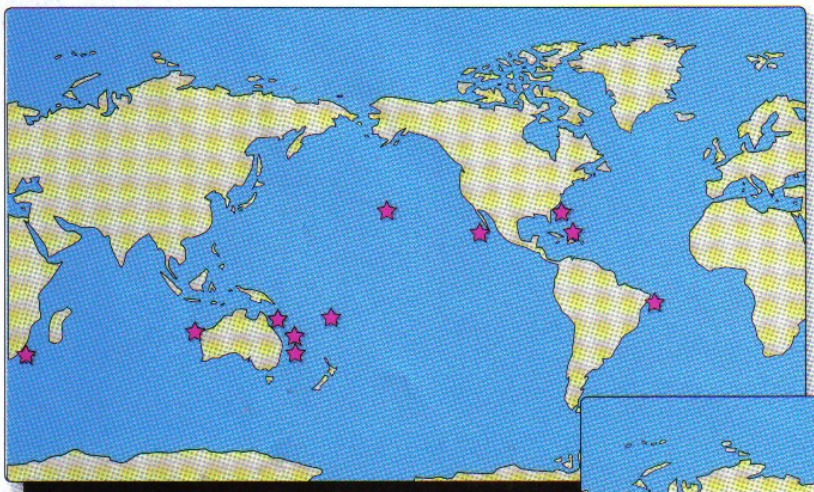
The wahoo's streamlined profile, fin arrangement and razor-sharp teeth strongly point to it being a relative of the toothed or Spanish mackerels (also called seerfishes). However, the closeness of the relationship between mackerels and wahoo is a bit clouded. The mackerels and the wahoo are placed in the tribe *Scomberomorini*, which is one of four tribes within the large tuna family *Scombridae*. Within the tribe *Scomberomorini* are 19 species, 18 of which are toothed mackerels, all closely related and belonging to the single genus *Scomberomorus*. The other distinctly different species, the wahoo, sits by itself, the only member of the genus *Acanthocybium*.

Several features immediately distinguish the wahoo from the toothed mackerels. First, the wahoo has a very obvious long and pointed snout. Technically, the leading edge of the eye is about equidistant between the tip of the snout and the rear of the gill cover, while in mackerels, the eye is much closer to the snout. Second, the wahoo's tail is small and quite vertical compared with the more typical large, sweeping tails of the mackerels; and third, all of the mackerels have gill rakers – fingerlike projections on the front of the gill arch – while wahoo completely lack them. In addition, the wahoo's gills themselves are very different from those of mackerels and tunas, looking more like a fine mesh than long filaments. Last, the wahoo is a single and very successful species, distributed across the whole globe, while in contrast, the 18 species of mackerels are much more restricted in their ranges, all occurring near land masses, some having a total range of only a few hundred thousand square miles.

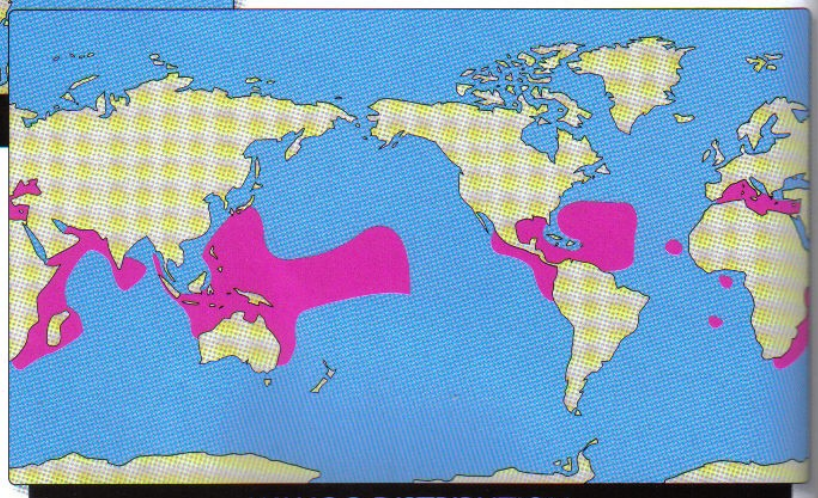
Perhaps the most striking feature of the wahoo is its colouration. More often than not, an excited wahoo displays the most brilliant vertical barring of any pelagic species, especially in small fish. The striping strongly resembles the markings of a tiger, with the contrasting dark and cobalt blue bars often forming double or Y-shaped stripes, sometimes extending to the undersurface. In common with many other pelagic species, the stripes fade rapidly after death and may not be visible at all in very large specimens.

DISTRIBUTION

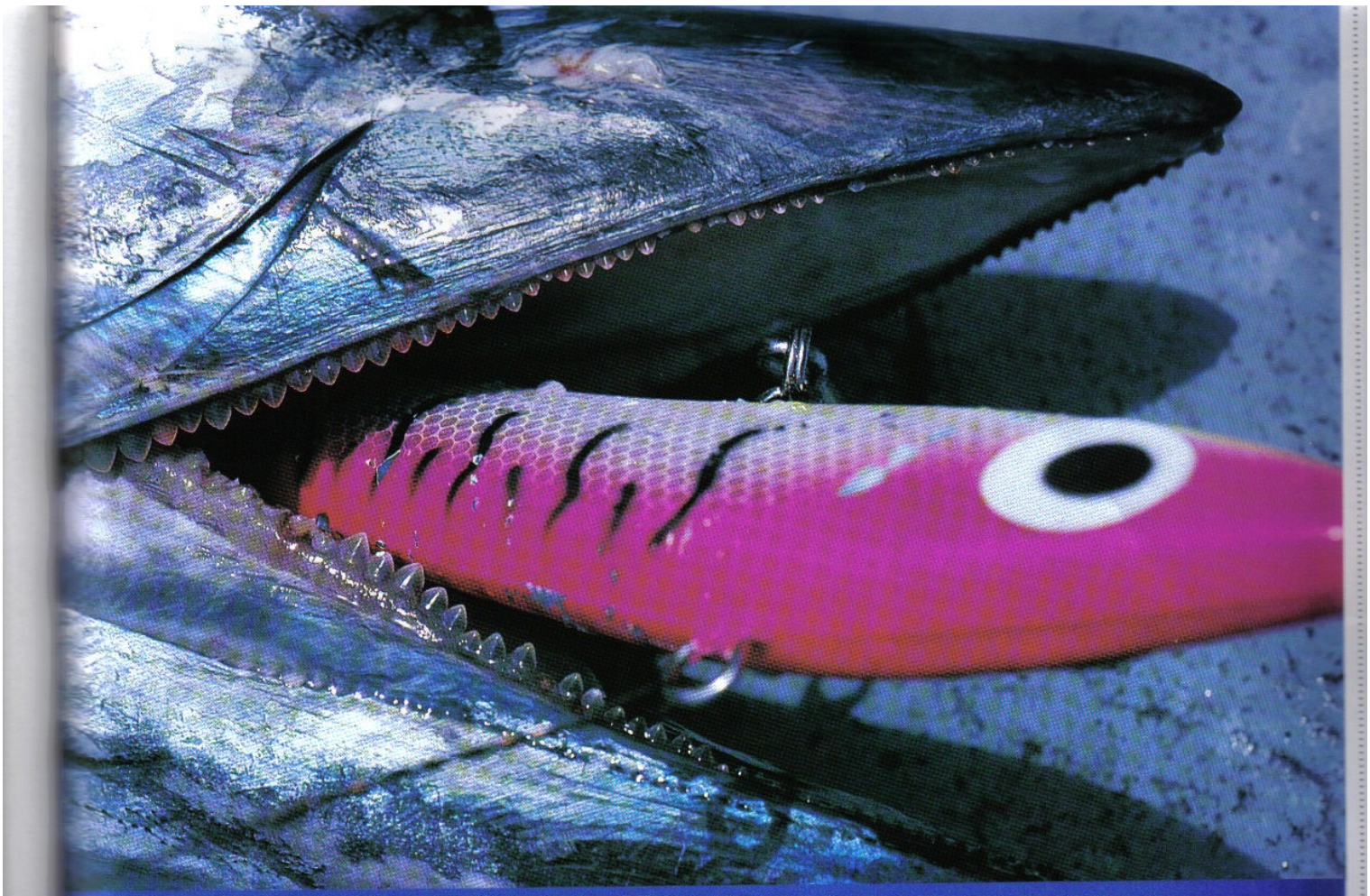
Although the wahoo is truly oceanic and widespread, it has a somewhat unusual, truncated distribution in all three major oceans. And although the Mediterranean is also depicted as part of its range, it has only been recorded there on two occasions. It is a tropical to sub-tropical species, occurring near the major continents, but tending to skirt the continental shelves of the large land masses, preferring the vicinity of islands and offshore atolls. Populations of wahoo tend to be highest in the western regions of each of the three major oceans, where they are normally found associated with islands, coral atolls and sea mounts. Off Australia, they are sometimes >

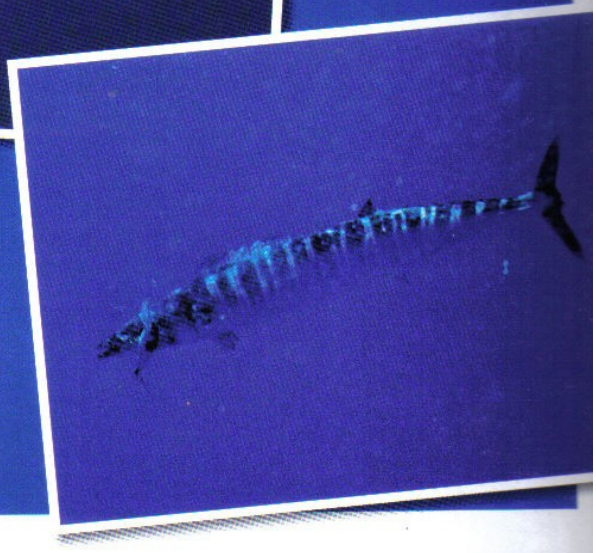


WAHOO HOTSPOTS



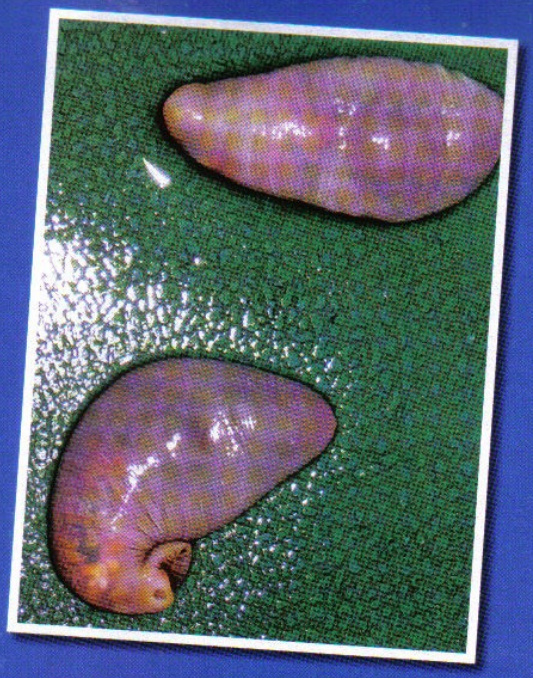
WAHOO DISTRIBUTION





WAHOO STRIPES

Transient vertical barring, as seen so vividly on the wahoo, is very widespread among oceanic predatory fish, including species such as marlin, sailfish, mackerels, skipjack tuna and even mahi mahi, when feeding. Why they all show such markings though is a topic of some debate. The most widely held theory is that since stripes most often appear when attacking prey (or trolled baits and lures), the barring may have the effect of breaking up the true outline of the predator, thereby confusing the prey long enough for it to be eaten. If that is the case, then any potential prey of wahoo must become very confused indeed!



WEIRD WAHOO WORMS

One off-putting aspect of the biology of wahoo is that their stomachs nearly always contain a couple of huge, fat, writhing leech-like worms up to 5cm or more in length. In fact, every wahoo I have dissected has contained two (very rarely, three) of them, and research around the world indicates that this is largely true wherever wahoo are found. The parasitic worm in question goes by the name of *Hirudinella ventricosa* and belongs to the large and diverse group of worms known as digenetic trematodes. Many trematodes are tiny internal parasites, which include flukes as small as blood cells; however, the wahoo parasite is a true giant among this group – probably the largest of them all. As noted, there are nearly always two worms (never just one) inside each wahoo. The reason for this is unknown, but the likely explanation is that there is an inbuilt mechanism by which the first pair of parasites kills any further worms, thereby ensuring that the host animal is not overburdened with too many parasites. Two is the ideal number, presumably for reproductive purposes, even though the worms are hermaphroditic (contain both sexes).

Some statistics on the incidence of the parasite from other parts of the world are of interest. In the Gulf of Mexico and the south-eastern Atlantic, the stomachs of 855 wahoo were examined and our friend, *Hirudinella ventricosa*, was found in 80.5% of those stomachs, with most containing two parasites. The size and sex of the host wahoo made no difference to the incidence of infestation. In Hawaii, another study found that 98% of wahoo contained the parasite, and while no quantitative studies have been done in Australia, it would be my bet that similar infestation rates would be found here.

While some other pelagic species such as mackerel tuna are also infected by related parasites, this particular type is highly host-specific, meaning that it only occurs in wahoo. This means that its life cycle must be intimately geared to that of the host. We don't know what that life cycle is yet, but it almost certainly involves an intermediate host such as a marine snail, possibly one of the floating snails that are common on the surface of the open ocean. Wahoo and presumably other species of fish must commonly ingest these intermediate hosts, but only wahoo stomachs are suitable incubators for this particular parasite. Even though these stomach worms are enough to turn one's own stomach, they are in no way harmful to humans and fish that contains them can be safely eaten.

FAST FACTS

encountered along the outer edge of the Great Barrier Reef, and are often prolific around outer atolls such as the Swains and Cato reefs. Wahoo also occur in large numbers around Lord Howe Island and especially at Middleton and Elizabeth reefs. One interesting but puzzling feature of the wahoo's distribution along the eastern seaboard is the intermittent nature of its appearances. During the late 1970s through to the late 1980s, wahoo were a regular, steady component of the gamefish catch off New South Wales. However, over the next eight years or so they virtually disappeared from this region, before making a welcome return to the scene in the summer of 1998/99. Why these periods of boom and bust occur is not known, but as with many pelagic fishes, the relative survival of larvae and post-larvae in good and bad years, coupled with favourable currents, are probably the driving forces behind such apparently random fluctuations in population size or availability.

MOVEMENTS

Virtually nothing is known about movements of wahoo. The NSW DPI Gamefish Tagging Program records 833 wahoo releases, but only four recaptures, all of which were in PNG waters. Unfortunately, the times at liberty for those four fish were too short to provide meaningful information on movement. Given the widespread oceanic distribution of wahoo and their tendency to appear and disappear seasonally, it is quite likely that individual fish are capable of long-distance movements across open water. However, until extensive tagging experiments are undertaken, preferably using popup satellite tags, such postulated long-distance movements will necessarily remain unproven. Fortunately, two such projects are currently under way, one off California and one off Florida, so as they say, watch this space.

GROWTH AND SIZE

For wahoo, the magic weight of 100lb (45kg) has long been regarded as a pinnacle. And while such fish are indeed rare, the maximum size for wahoo quoted in scientific literature is a whopping 83kg (183lb) and a length of 210cm, although the source of that data is somewhat obscure. Until recently, the All-Tackle World angling record was a very respectable 71.9kg (158lb), caught off Baja California in 1996. However, that record was smashed in 2005 by a huge wahoo caught by a 15-year-old girl off Cabo San Lucas, Mexico (not far from the previous record). This fish weighed in at an almost unbelievable 83.6kg (184lb), finally lending credence to the oft-quoted maximum size referred to above.

In Australia, the heaviest recorded wahoo weighed 47kg (103lb) and was caught off Sydney in 1987, while the largest caught off the Western

Left: Charlene Mascuch with her 49kg (108.6lb) IGFA Womens World Record wahoo on 15kg tackle, caught in 1977. Right: Sara Hayward with the All Tackle IGFA World Record for wahoo. The 83.6kg (184lb) fish was caught at Cabo San Lucas, Mexico in July 2005.

Australian coast weighed 30.6kg (67.4lb). The growth rate of wahoo is virtually unstudied, but given their voracious appetite and obvious high metabolism, it is quite likely that the species has a very rapid growth rate, especially when young. In fact, despite some exhaustive research on my part, I have not been able to find a single photo or illustration of a small wahoo less than around 2kg in size, perhaps due, at least in part, to very rapid early growth rates. One preliminary study in the Gulf of Mexico suggested that this is indeed the case, with fish estimated to attain about 7kg by the end of their first year and up to 20kg by four years of age. Even more rapid growth was demonstrated by one wahoo that was tagged in the western Atlantic and recaptured after just 10 months, during which time it had grown from an estimated 5kg to 15kg, while another recent study suggests that wahoo may even reach 30lb (13kg) by their first birthday. It is not known how long wahoo live, but a specimen of 70kg or more might be expected to have been around for 10 years or more.

REPRODUCTION

Because fish in various stages of reproductive activity are often found in the same areas, it is likely that wahoo have extended spawning seasons. Not surprisingly, wahoo have a high reproductive rate, maturing by a size of about 100cm, and producing several batches of eggs through a season. A study of wahoo caught both inside and outside the Gulf of Mexico showed that some males as small as 7lb (3.2kg) and females as small as 12lb (5.5kg) were sexually mature. A single wahoo measuring 131cm in length was estimated to contain about six million eggs – a high number for a fish of this size, and suggesting that a two-metre fish would produce at least 10 million eggs for each batch. As with other pelagics, the small eggs (about one millimetre diameter) are fertilised externally and float at the surface until hatching into tiny larvae two or three days later. The larvae have large eyes and enormous mouths, devouring any other swimming fish or other larva that moves within range.

FEEDING AND BEHAVIOUR

Both the upper and lower jaws of wahoo are equipped with a single row of extremely sharp, finely serrated teeth that they use to slice through prey species with a single motion. Their chopping action is made even more efficient by the fact that they are one of few species of fish that have a movable upper jaw, increasing their gape and allowing them to cut right through quite large prey. As many a gamefish angler will attest, it is not uncommon for wahoo to attack trolled baits and consistently chop them cleanly just behind the hook time and again, much to the annoyance of bait-rigging deckhands. Wahoo will attack most pelagic prey, including tunas, flying fishes, scads and pilchards. In fact, the species list of dietary items found in wahoo stomachs reads like a roll call of just about everything that swims in surface waters.

The eyesight of wahoo must be incredibly acute since it is not uncommon to see one hurtling towards a trolled bait from 50m away or more. A quote from an early fishing writer, Thomas Aitken, illustrates this well: "The strike of a wahoo is a detail which beggars description. From a distance of between one and two hundred feet I have seen a wahoo approach a bait like a projectile – straight and true – with dorsal and part of its back cutting the waves. At the impact the fish usually veers off at a sharp right angle giving the angler a terrific shock, even if prepared."

THE FASTEST FISH IN THE WORLD?

Probably since the first one was hooked on rod and reel, wahoo have been reputed to be among the fastest fish that swims, and by many as *the* fastest. But is this claim fact or fiction? Searching through a range of fish books and browsing the Internet, it is not hard >

"IN AUSTRALIA, THE HEAVIEST RECORDED WAHOO WEIGHED 47KG (103LB)"

Top left: Chris Baty with a 100lb wahoo taken from a tender dingy off North Queensland on a giant bibless minnow. Top right: David Campsell and Clyntn Braithwaite with a vividly striped wahoo. Below: Local stamps show the popularity and significance of wahoo throughout the Pacific.

"WAHOO HAVE BEEN REPUTED TO BE AMONG THE FASTEST FISH THAT SWIMS."

to find quite a number of references to the top speeds 'observed' or 'clocked' for wahoo and various other fish speedsters. For example, one website noted that "underwater, a shortfin mako has been reliably clocked at 31mph (50k/h), and there is one claim that it has a burst swimming speed of up to 46mph (74k/h)". And further, "Some big-game anglers believe that the bluefin tuna is the fastest fish in the sea. Burst speeds of up to 64.4mph (103.5k/h) have been claimed for this species, but the highest speed recorded so far is 43.4mph (69.8k/h) in a 20-second dash. The yellowfin tuna and the wahoo are also extremely fast, having been timed at 46.35mph (74.5k/h) and 47.88mph (77k/h), respectively." And last, "The Atlantic sailfish is considered by many to be the fastest species of fish over short distances. In a series of speed trials carried out at Long Key Fishing Camp, Florida, one sailfish took out 100 yards of line in three seconds, which is equivalent to a speed of 68mph (109k/h)." Now one would think that these figures, some quoted to the second decimal place, are based on actual measurements, and while some, or all, may be valid, in almost every case of a quoted speed for such fish, no references are cited that may be checked for details of methods used and accuracy of measurement. On the other hand, there are two reported experiments of which I am aware that give some credence to the range of speeds quoted. In one case, captive bluefin tuna were indeed clocked at 77k/h (48mph) over a single burst, and in the only experiment I know of which actually measured wahoo speeds, one fish was clocked at 76k/h. This measurement was made by very accurate mechanical timing of the rate of line peeling from a low-friction reel immediately after hook-up. So there you have it. One experiment on one wahoo, but nevertheless, an impressive speed of 76k/h (47.2mph). I'm sure that anyone who has seen reels implode, and heard the line slicing through the water as a wahoo heads for the horizon, will not be surprised at all with that result.

FISHERIES

Wahoo are excellent and popular table fish, and always a welcome catch on any gamefishing trip. However, since it is not a schooling species it is rarely targeted commercially (which is probably just as well for a non-schooling predatory fish). There are exceptions to this rule though, and the species is often canned in Samoa as a bycatch of tuna longlining. (I used to think that such a product would be delicious, but on a recent trip to Samoa was disappointed to find that the canned wahoo was flaked and drowned in cheap vegetable oil. Not a gourmet experience at all.) Wahoo occur commonly enough around Lord Howe Island to have been considered a commercial proposition in the past, and in some years small quantities have been exported to Hawaii. And it is in Hawaii that the wahoo is in the greatest demand as a food fish – where it can be found on just about every menu under its local name, 'ono'. Such is the demand that local supply can never keep up, with the result that much of the ono sold in Hawaii is imported from many other Pacific Ocean countries.

WATCH THE TEETH!

Wahoo are not often specifically targeted by recreational anglers, although if it is known that wahoo are present in an area, rugged lures rigged with strong wire traces may be put out to catch this welcome addition to the day's fishing. As with any of the toothy pelagic predators though, care must be exercised when boating and subduing wahoo – many an ankle or calf has been badly lacerated by a snapping wahoo sliding around a wet deck.

To my mind, the wahoo is one of the open ocean's more mysterious and intriguing fish. What you have just read represents pretty well the sum total of what we know about its life cycle, which unfortunately, is not a lot. Let's hope that current research efforts around the world go much further in unlocking the secrets of this unique fish and in so doing, ensure that it will still be enthralling future generations with its striking beauty and sheer, unadulterated speed.