

Section 2 Week 6

The Living Element Part 1

1.5

Nekton

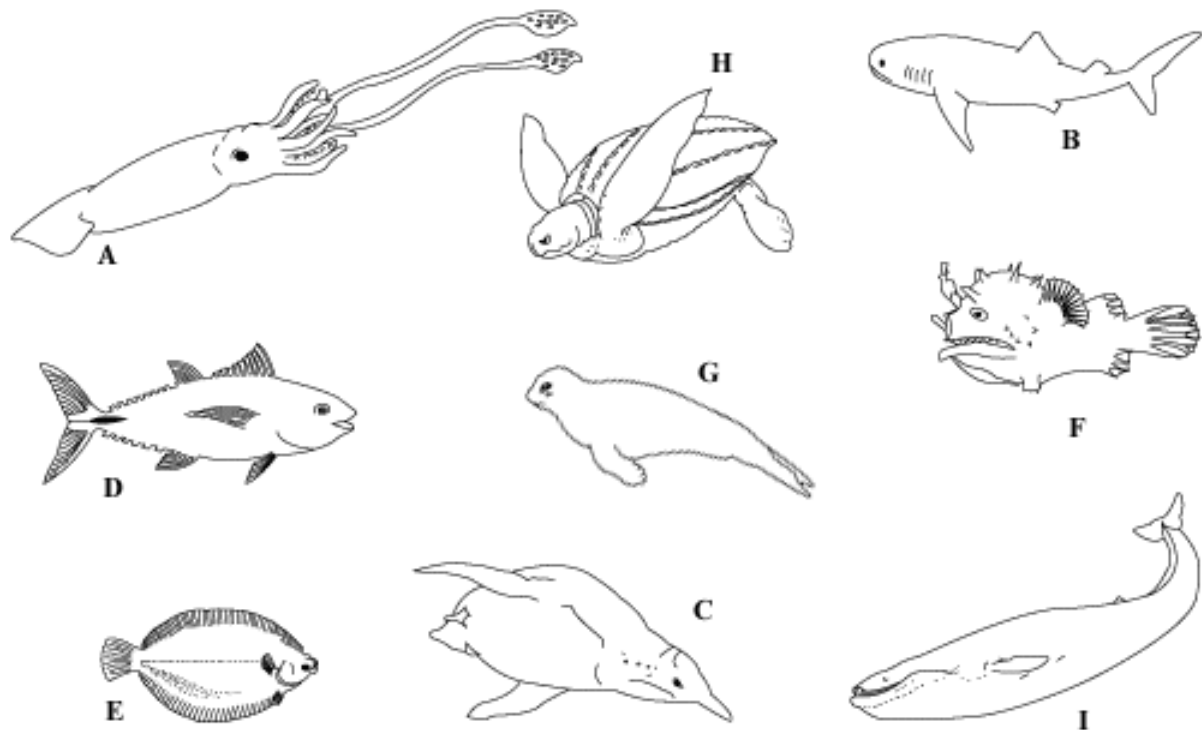


Figure 14. Representative members of the Nekton: A.squid; B.shark;C.penguin;D.tunny; E.flatfish; G.seal; and I.whale.

Organisms whose swimming capacity permits them to move actively in the water column and to move against the direction of the currents form the group known under the collective name of Nekton (Figure 14).

In this category are included all the fish, marine mammals (whales, dolphins, seals), sea turtles, some bird species like penguins as well as some invertebrate species like Cephalopods (cuttlefish, squids), and shrimps etc. The majority of the Nekton species consists of carnivorous organisms which find their prey over a wide area. Herbivorous species like the anchovy (*engraulis encrasicolus*), however, play a major role in upwelling areas of the sea where large quantities of fish can still be harvested.

1.5.3

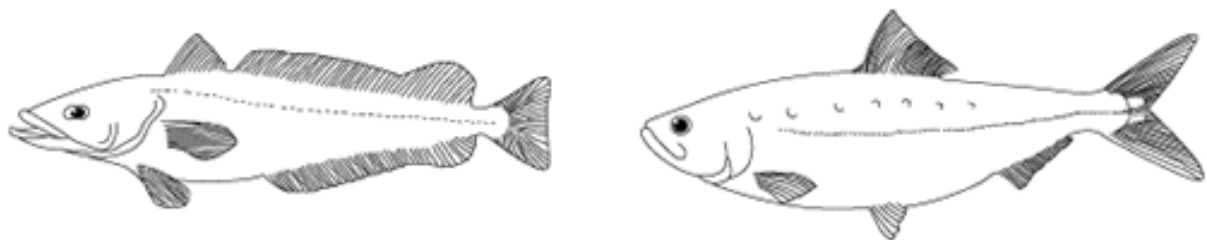
Body structure

Since swimming speed is an important feature of their life, their whole body structure is characterized by hydrodynamic shape (so that it presents minimal resistance during swimming), well developed muscles and special adaptations which ensure flexibility and easy navigation (fins, tail).

1.5.4

Swim bladder & lateral line

Two important adaptations of the most developed fish are the swim bladder and the lateral line. The former is an internal sac filled with air which ensures neutral buoyancy while the latter is a formation growth on both sides of the body (**see Figures 15 a and b**) where special neural receptors enable the fish to feel the relative movement of the water and consequently the relative speed and direction of neighbouring fish. This latter adaptation is of great importance, especially for fish that form schools where, when they sense danger, all react simultaneously and in the same manner.



Figures 15 a) & b). *Merluccius merluccius* and *Clupea finta*: two species with a noticeable lateral line

1.5.5

Migration pattern

Many fish species, in order to increase the number of their offspring, have adopted a particular migratory pattern (Figure 16): the mature adult individuals form schools and move

together in areas called spawning grounds where they mate and lay their eggs. After hatching the juvenile individuals, usually aided by water currents, move on to areas of increased productivity (nursery grounds). There they spend a certain period of their life until they grow big enough to migrate to the areas where the adults live (feeding grounds). Nursery grounds are usually shallow areas more or less protected from wave action. These areas are of great importance since any disturbance, for instance by a pollution event, could have a severe impact on a large fish population.

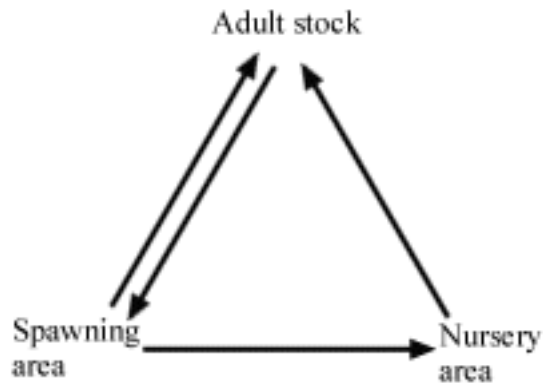


Figure 16. The pattern of fish migration.