LIFE CYCLE WORKSHEET

Sketch or picture of fish

Name of Fish: _____

EGGS

Egg size: _____

Location: _____

Incubation time: _____

Comments: _____

_____

LARVAL FISH:

Month of hatch: _____

Habitat: _____

Diet: _____

Comments: _____

_____

FRY

Habitat: _____

Diet: _____

Comments: _____

_____

_____

JUVENILE

Habitat: _____

Diet: _____

Comments: _____

_____

_____

ADULT

Habitat: _____

Diet: _____

Average lifespan: _____

Comments: _____

_____

_____

SPAWNING

Age at first spawning: _____

Frequency of spawning: _____

Preferred spawning habitat: _____

Spawning season: _____

Average number of eggs deposited (varies by size of female): _____

Spawning behavior: _____

Comments: _____

_____

_____

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REPRODUCTIVE STRATEGIES

In general, animals use one of two basic reproductive strategies. They may produce:

- Limited numbers of offspring, reproduce infrequently, and invest significant nutritional resources and time to ensure a high probability of survival for each offspring (e.g., humans, elephants);
- Massive quantities of offspring, reproduce more frequently, and invest hardly any time or resources in any one offspring (e.g., fish).

EXAMPLE REPRODUCTIVE STRATEGIES OF GREAT LAKES FISH

While Great Lakes fish typically produce eggs in mass quantities, the number of eggs and amount of energy invested into each egg varies by species.

- **Smallmouth bass:** Female smallmouth bass produce eggs in the spring. Males build nests in shallow gravel areas near a rock or log for shelter and guard the fertilized eggs. After smallmouth bass hatch and emerge from the gravel, they form balls up to three feet in diameter containing hundreds of fry. The male continues to guard his offspring as they begin to move apart and wander farther from the nest until the fry are so far apart that guarding is no longer possible.
- **Lake whitefish:** Lake whitefish are open water fish but spawn near shore in the fall. Spawning takes place at night close to the surface and is very active. Male and female fish sometimes leap out of the water during spawning. Eggs fall to the bottom and remain there until hatching in the spring. Winter ice cover may help keep wind from stirring the bottom and covering the eggs with sediment. Removal of natural bedrock such as in the creation of shipping channels is thought to interfere with lake whitefish spawning.
- **Lake sturgeon:** Lake sturgeon have a slow reproductive cycle and spawn only once every four years on average. Fast flowing water is best for sturgeon. Lake sturgeon compete with power companies for habitat because high gradient (steep), fast flowing sections of rivers are also good places to produce hydro-electric power.
- **Round goby:** Female round gobies spawn repeatedly from April to September. Males build nests and guard their eggs and young, but most die soon after spawning. Round gobies are an invasive species that presumably arrived in the ballast water of vessels coming into the Great Lakes. They can tolerate degraded water quality and are able to withstand low oxygen concentrations for several days. They compete with native species for spawning habitat.

The chart below compares the reproductive strategies of four Great Lakes fish.

Notice the differences in lifespan, age at first spawning, and spawn interval among these fish. Round gobies have a shorter lifespan but reproduce several times per year. Lake sturgeon live longer but reproduce less frequently.

Also notice the differences in egg size and number of eggs produced. Lake whitefish produce a greater number of eggs per pound than lake sturgeon. However, lake sturgeon eggs are much bigger than lake whitefish eggs. In relation to lake whitefish, lake sturgeon tend to invest more energy and time in fewer offspring with the goal to ensure a high probability of survival for each.

	Smallmouth bass	Lake whitefish	Lake sturgeon	Round goby
Lifespan	15 years	10 years	80-150 years (female)	2-3 years (female)
Age at first spawning	5-7 years (female)	2-8 years	24-26 years (female)	1-2 years (female)
Spawn interval	Every year	Every 2-3 years	Every 4-6 years (female)	Many times per year (female)
Egg size	1.2 - 2.5 mm diameter	~2.3 mm in diameter	2.7-3.5 mm diameter	~3 mm in diameter
Number of eggs	~7000 per pound	8000-16000 per pound	4000-6000 per pound	80 - 600 (goby weigh <1 pound)