CLAIMS

1. An apparatus for harvesting aquatic animals, comprising:

a cod end portion having an open leading end and a closed trailing end and one or more side walls between the leading end and the trailing end, wherein the side wall(s) comprise(s) a flexible membrane and wherein the side wall(s) and the trailing end are substantially impervious to water; and

an elongate lengthener portion having a leading end, a trailing end, and one or more side wall(s) between the leading end and the trailing end, wherein at least a major part of the side wall(s) comprise(s) a flexible membrane that is substantially impervious to water, and wherein the trailing end of the lengthener portion is operatively connected to the leading end of the cod end portion;

wherein the elongate lengthener portion comprises a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus to cause a general reduction in the water flow rate inside the apparatus from the leading end of the elongate lengthener portion toward the trailing end of the elongate lengthener portion and toward the trailing end of the cod end portion when the apparatus is submerged in a body of water and there is water flow relative to the apparatus.

2. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the average water velocity in the cod end portion relative to the apparatus is less than about 10% of the relative water velocity outside the apparatus.

3. An apparatus as claimed in claim 1, wherein the escapements are formed in the flexible membrane.

4. An apparatus as claimed in claim 1, wherein at least one of the escapements comprises a slit in the side wall or one of the side walls of the elongate lengthener portion.

5. An apparatus as claimed in claim 1, wherein at least one of the escapements comprises a slot or other aperture in the side wall or one of the side walls of the elongate lengthener portion.

6. An apparatus as claimed in claim 1, wherein the elongate lengthener portion comprises an escapement portion wherein an upper region of the escapement portion comprises a plurality of escapements, a lower region of the escapement portion comprises a plurality of escapements, and two opposite side regions of the escapement portion are substantially impervious to water, and wherein the elongate lengthener portion comprises a

plurality of lengthener modules arranged in series, each lengthener module having a leading end and a trailing end.

7. An apparatus as claimed in claim 6, wherein the plurality of lengthener modules comprises a first escapement module comprising a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus.

8. An apparatus as claimed in claim 7, wherein the plurality of lengthener modules further comprises an extension module that is substantially impervious to water.

9. An apparatus as claimed in claim 8, wherein the plurality of lengthener modules further comprises a second escapement module comprising a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus, and the extension module is positioned between the first and second escapement modules.

10. An apparatus as claimed in claim 9, wherein the first escapement module is positioned forward of the second escapement module, and the plurality of escapements in the first escapement module are larger than the plurality of escapements in the second escapement module.

11. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the total open area provided by the escapements is less than 5% of the total wall area of the lengthener portion.

12. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the total open area provided by the escapements is less than about 60% of the cross sectional area of the front of leading end of the lengthener portion.

13. An apparatus as claimed in claim 1, wherein the cod end portion is configured such that aquatic animals in the cod end portion will be retained and cushioned in water when the apparatus is pulled onto a boat from its leading end.

14. An apparatus as claimed in claim 1, configured to self-inflate upon being towed through a body of water from its leading end.

15. An apparatus for harvesting aquatic animals, comprising:

a cod end portion that is substantially impervious to water other than an open leading end thereof; and

an escapement module operatively connected to the cod end portion and positioned forward of the open leading end of the cod end portion, the escapement module having an open leading end, an open trailing end, and a wall portion between the open leading end and the open trailing end, wherein the wall portion comprises a flexible membrane, at least a major part of the wall portion being substantially impervious to water, and wherein a plurality of escapements are formed in the flexible membrane of the wall portion, wherein aquatic animals that are smaller than a desired size can pass from an interior of the apparatus to an exterior of the apparatus through the escapements;

wherein water can pass through the escapements, from an interior of the apparatus to an exterior of the apparatus to cause a general reduction in the water flow rate inside the apparatus from the leading end of the escapement module toward the trailing end of the escapement module and toward a trailing end of the cod end portion when the apparatus is submerged in a body of water and there is water flow relative to the apparatus.

16. A method of harvesting aquatic animals comprising the steps of:

submerging an apparatus as claimed in claim 1 ~~or claim 15~~ in a body of water and positioning and/or moving the apparatus such that there is water flow relative to the apparatus and through the escapements so that the flow rate of water inside the apparatus generally reduces from the leading end of the elongate lengthener portion toward the trailing end of the elongate lengthener portion and toward the trailing end of the cod end portion; and

capturing aquatic animals in the apparatus while providing a relaxed low flow rate environment for the aquatic animals in the apparatus, and allowing aquatic animals that are smaller than a desired size to escape through the escapements.

17. A method as claimed in claim 16, comprising towing the apparatus through the body of water.

18. A method as claimed in claim 16, comprising generating a water velocity in the cod end portion relative to the apparatus of less than about 10% of the relative water velocity outside the apparatus.

~~19. A method as claimed in claim 16, further comprising allowing aquatic animals that are smaller than a desired size to escape through the escapement(s).~~

~~20.~~19. A method of harvesting aquatic animals as claimed in claim 16, further comprising the step of raising the apparatus from its leading end until the leading end of the apparatus is on or over a delivery area for the animals, while maintaining aquatic animals in the cod end portion in a pool of water.

~~21.~~20. A method of harvesting aquatic animals as claimed in claim ~~20~~19, further comprising causing aquatic animals of at least a desired size to flow back into the cod end portion as the apparatus is raised.

~~22.~~21. A method as claimed in claim ~~20~~19, further comprising raising the trailing end of the cod end portion and thereby causing water and animals to flow out of the apparatus.

~~23.~~22. A method as claimed in claim ~~20~~19, wherein the delivery area is onboard a marine vessel.

~~24.~~23. A method of assembling an apparatus for harvesting aquatic animals comprising the steps of:

providing a cod end portion having an open leading end and a closed trailing end and one or more side walls between the leading end and the trailing end, wherein the side wall(s) comprise(s) a flexible membrane and wherein the side wall(s) and the trailing end are substantially impervious to water;

providing a first escapement module having a leading end, a trailing end, and one or more side wall(s) between the leading end and the trailing end, wherein at least a major part of the side wall(s) comprise(s) a flexible membrane that is substantially impervious to water, and comprising a plurality of escapements through the side wall(s); and

operatively connecting the trailing end of the first escapement module to the leading end of the cod end portion so as to form an apparatus in which, when the apparatus is submerged and there is water flow relative to the apparatus, water can pass from an interior of the apparatus to an exterior of the apparatus through the escapements to cause a general reduction in the water flow rate inside the apparatus from the leading end of the first escapement module toward the trailing end of the first escapement module and toward the trailing end of the cod end portion, and aquatic animals that are smaller than a desired size can pass from an interior of the apparatus to an exterior of the apparatus through the escapements.

~~25.~~24. A method as claimed in claim ~~24~~23, further comprising providing a second escapement module having a plurality of escapements through which aquatic animals that are smaller than a desired size can pass from an interior of the apparatus to an exterior of the apparatus, and operatively attaching a leading end of the second escapement module to the trailing end of the first escapement module, and a trailing end of the second escapement module to the leading end of the cod end portion, so that the second escapement module is positioned between the first escapement module and the cod end portion.

~~26.~~25. A method as claimed in claim ~~25~~24, further comprising providing an extension module that is substantially impervious to water, and operatively attaching a leading end of the extension module to the trailing end of the first escapement module, and a trailing end of the extension module to the leading end of the second escapement module, so that the

extension module is positioned between the first escapement module and the second escapement module.

CLAIMS

1. An apparatus for harvesting aquatic animals, comprising:

a cod end portion having an open leading end and a closed trailing end and one or more side walls between the leading end and the trailing end, wherein the side wall(s) comprise(s) a flexible membrane and wherein the side wall(s) and the trailing end are substantially impervious to water; and

an elongate lengthener portion having a leading end, a trailing end, and one or more side wall(s) between the leading end and the trailing end, wherein at least a major part of the side wall(s) comprise(s) a flexible membrane that is substantially impervious to water, and wherein the trailing end of the lengthener portion is operatively connected to the leading end of the cod end portion;

wherein the elongate lengthener portion comprises a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus to cause a general reduction in the water flow rate inside the apparatus from the leading end of the elongate lengthener portion toward the trailing end of the elongate lengthener portion and toward the trailing end of the cod end portion when the apparatus is submerged in a body of water and there is water flow relative to the apparatus.

2. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the average water velocity in the cod end portion relative to the apparatus is less than about 10% of the relative water velocity outside the apparatus.

3. An apparatus as claimed in claim 1, wherein the escapements are formed in the flexible membrane.

4. An apparatus as claimed in claim 1, wherein at least one of the escapements comprises a slit in the side wall or one of the side walls of the elongate lengthener portion.

5. An apparatus as claimed in claim 1, wherein at least one of the escapements comprises a slot or other aperture in the side wall or one of the side walls of the elongate lengthener portion.

6. An apparatus as claimed in claim 1, wherein the elongate lengthener portion comprises an escapement portion wherein an upper region of the escapement portion comprises a plurality of escapements, a lower region of the escapement portion comprises a plurality of escapements, and two opposite side regions of the escapement portion are substantially impervious to water, and wherein the elongate lengthener portion comprises a

plurality of lengthener modules arranged in series, each lengthener module having a leading end and a trailing end.

7. An apparatus as claimed in claim 6, wherein the plurality of lengthener modules comprises a first escapement module comprising a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus.

8. An apparatus as claimed in claim 7, wherein the plurality of lengthener modules further comprises an extension module that is substantially impervious to water.

9. An apparatus as claimed in claim 8, wherein the plurality of lengthener modules further comprises a second escapement module comprising a plurality of escapements through which aquatic animals that are smaller than a desired size and water can pass from an interior of the apparatus to an exterior of the apparatus, and the extension module is positioned between the first and second escapement modules.

10. An apparatus as claimed in claim 9, wherein the first escapement module is positioned forward of the second escapement module, and the plurality of escapements in the first escapement module are larger than the plurality of escapements in the second escapement module.

11. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the total open area provided by the escapements is less than 5% of the total wall area of the lengthener portion.

12. An apparatus as claimed in claim 1, configured such that when the apparatus is submerged and there is water flow relative to the apparatus, the total open area provided by the escapements is less than about 60% of the cross sectional area of the front of leading end of the lengthener portion.

13. An apparatus as claimed in claim 1, wherein the cod end portion is configured such that aquatic animals in the cod end portion will be retained and cushioned in water when the apparatus is pulled onto a boat from its leading end.

14. An apparatus as claimed in claim 1, configured to self-inflate upon being towed through a body of water from its leading end.

15. An apparatus for harvesting aquatic animals, comprising:

a cod end portion that is substantially impervious to water other than an open leading end thereof; and