

Table S1

This study		Gherardi et al. 2010		Skog et al. 2007		Breithaupt and Atema 2000		Karavanich and Atema 1998		Atema and Voigt 1995		Huber and Kravitz 1995		Stein et al. 1975		Atema and Engstrom 1971		Scrivener 1971	
Species studied: <i>Homarus gammarus</i> (adults)		<i>Homarus americanus</i> (adults)		<i>Homarus gammarus</i> (adults)		<i>Homarus americanus</i> (adults)		<i>Homarus americanus</i> (adults)		<i>Homarus americanus</i> (adults)		<i>Homarus americanus</i> (juveniles)		<i>Homarus americanus</i> (adults)		<i>Homarus americanus</i> (adults)		<i>Homarus americanus</i> (adults)	
Appendages	Description	Behaviours (+ agonistic level)	Description	Behaviours (+ agonistic level)	Description	Behaviours (+ agonistic level)	Description	Behaviours (+ agonistic level)	Description	Behaviours (+ agonistic level)	Description	Behaviours	Description	Behaviours	Description	Behaviours	Description	Behaviours	Description
<b>Antennas</b>																			
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Antennule flicking</b> (Neutral 0)	Rapid downstroke of lateral filament	NM	NM	NM	NM	NM	NM	NM	NM
<b>Antenna sensing - searching</b> (when separating/resting)	One antennae directed followed continuously opponent by the submissive lobster	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Antenna pointing</b> (Investigative behaviour)	Stationary lobster demonstrated antenna pointing but then continued to follow its moving opponent with an antenna (2-5sec duration). It frequently occurred when lobsters were about 65 cm apart, either coming closer together or separating (gained or lost sensory contact).
<b>Antenna pointing</b> (during agonistic bout)	One or both antennae directed (forward) toward opponent	NM	NM	NM	NM	NM	NM	<b>Antenna point</b> (No physical contact threat display 2)	Holding antennae parallel to body axis and directed towards opponent	<b>Antenna pointing</b> (Aggressive 3)	One or both antennae directed (forward) toward opponent	NM	NM	NM	NM	<b>Antennal search</b> (Alert)	NM	<b>Antenna pointing</b> (Investigative behaviour)	One or both antennae are moved from the normal resting posture (pointing 45° upwards from the tank bottom and away from the body axis), to a position pointing anteriorly, in the direction of the other combatant, and thus parallel to the bottom and the body axis. Short duration (1-2sec).
<b>Antenna touching</b>	One or both antennae continuously touching opponent body and/or antennae (can be continuous or very fast)	NM	NM	<b>Antenna touch</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Antenna touching</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Antenna touching</b> (Physical contact claws not used to grasp 3)	Antennae continuously touching opponent's body	<b>Antenna touching</b> (Aggressive 3)	One or both antennae continuously touching opponent	NM	NM	NM	NM	NM	NM	NM	NM
<b>Antenna up</b>	Antenna pointing directly up (perpendicular to body length)	<b>Antenna up</b> (Threat 2)	Both antennae are pointed straight up and away from the opponent	NM	NM	NM	NM	NM	NM	<b>Antenna up</b> (Neutral 0)	Antenna pointing directly up	<b>Antenna up</b>	Both antennae are pointed straight up and away from the opponent	NM	NM	NM	NM	NM	NM
<b>Antenna whipping</b>	Lashing of opponent body and/or antennae with antennae in sweeping motion	<b>Antenna tap / whipping</b> (Threat 2)	In a single motion, an antenna is rapidly swept downwards over the anterior portion of the thorax of the opponent / One or both antennae vigorously and repeatedly lash the opponent in rapid sequence	<b>Antenna whip</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Antenna whipping</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Antenna whipping</b> (Physical contact claws not used to grasp 3)	Lashing of opponent with antennae in sweeping motion	<b>Antenna whipping</b> (Aggressive 3)	Lashing of opponent with antennae in sweeping motion	<b>Antenna tap / whipping</b>	In a single motion, an antenna is rapidly swept downwards over the anterior portion of the thorax of the opponent / One or both antennae vigorously and repeatedly lash the opponent in rapid sequence	<b>Antenna feel/whip</b> (Social behaviour)	Quick successive movements of the antennae over another lobster - occurs in an aggressive encounter (i.e. face off or in mating)	NM	NM	<b>Antenna whipping</b> (Aggressive behaviour)	One lobster lashes another by sweeping its antennae back and forth in an horizontal plane. Often when an animal starts antennae whipping, its opponent reciprocates. Usually combined with pushing or meral spread. Duration = 1-10 seconds
<b>Antenna backward</b> (during claw contact)	Antenna directed backward, parallel to body length	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
<b>Claws</b>																			
<b>Claw extended</b>	Claws are lying forward, parallel to the body axis	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
<b>Claw forward</b>	Defensive body position where seizer claw is raised and extended and crusher claw is close to the body	NM	NM	<b>Claw forward</b> (Threat display 2)	See Atema and Voigt (1995)	<b>Claw forward</b> (No physical contact threat display 2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw forward</b> (No physical contact threat display 2)	Either chela extended directly forward and up	<b>Claw forward</b> (Aggressive 2)	One claw, usually seizer, extended up and out from body	NM	NM	En garde (social behaviour)	Defensive body position where seizer claw is raised and extended and crusher claw is close to the body	NM	NM	NM	NM
<b>Claw open</b>	Either or both claws completely open, usually seizer	NM	NM	<b>Claw open</b> (Threat display 2)	See Atema and Voigt (1995)	NM	NM	<b>Claw open</b> (no physical contact threat display 2)	Dactyl of either chela held wide open	<b>Claw open</b> (Aggressive 2)	Either or both claws completely open, usually seizer	NM	NM	NM	NM	<b>Claw open</b> (Aggressive)	NM	NM	NM
NM	NM	<b>Claw down</b> (Threat 2)	One or both claws are pointed straight down towards the substrate	NM	NM	NM	NM	NM	NM	NM	NM	<b>Claw down</b>	One or both claws are pointed straight down towards the substrate	NM	NM	NM	NM	NM	NM
<b>Meral spread</b>	Both claws extended up and out from body. The crusher claws is raised up toward the opponent	<b>Claw up - threat</b> (Threat 2)	One or both claws are lifted high above the horizontal and extended laterally / Aggressive display, claws extended outwards and upwards	<b>Meral spread</b> (Threat display 2)	See Atema and Voigt (1995)	<b>Meral spreading</b> (No physical contact threat display 2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Meral spread</b> (no physical contact threat display 2)	Large chelae extended up and out, laterally away from body	<b>Meral spreading</b> (Aggressive 2)	Both claws extended up and out from body	<b>Claw up</b>	One or both claws are lifted high above the horizontal and extended laterally	<b>Meral spread</b> (social behaviour)	Claws raised and spread apart - usually a defensive posture	NM	NM	<b>Meral spread</b> (Aggressive behaviour)	Stands its legs with its body raised from 4-5 cm off the bottom. The abdomen is usually fully extended, with the cephalothorax angled slightly upwards from the horizontal. The chelae are held about 5cm off the bottom spread wide apart with their long axes pointing directly at the opponent. Some animals hold the claws fully extended, wide apart and as high off the bottom as possible. Pleopods are held against the abdomen and are not visible from a lateral view. The antennae are pointed at angles of 45° upwards and away the body axis. Max duration = 3min
<b>Claw touching</b>	Continuous touching of opponent body and/or claws with one or both claws	<b>Claw touch closed/open</b> (Strike 3)	A lobster touches the opponent with closed/open claws	<b>Claw touch</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Claw touching</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw touching</b> (Physical contact claws not used to grasp 3)	Continuous contact of with chelae to opponent's body	<b>Claw touching</b> (Aggressive 3)	Continuous touching of opponent with (closed) claw	<b>Claw touch closed/open</b>	A lobster touches the opponent with closed/open claws	NM	NM	NM	NM	NM	NM
<b>Claw lunging</b>	Thrust claw(s) forward	NM	NM	NM	NM	NM	NM	NM	NM	<b>Claw lunging</b> (Aggressive 3)	Thrust claw(s) forward	NM	NM	<b>Lunge</b> (social behaviour)	Fast extension of claws, usually accompanied by a run	NM	NM	NM	NM
<b>Claw pushing</b>	Continuous pressing of claw(s) on opponent's body and/or claws	<b>Push</b> (Strike 3)	A lobster attempts to displace an opponent through pushing and pulling using walking legs and pleopod and/or uses claws to push and/or punch claws or body of the opponent	<b>Claw push</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Claw pushing</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw pushing</b> (Physical contact claws not used to grasp 3)	Pressing chelae on opponent's body and walking forward, or extending chelae in an attempt to displace opponent	<b>Claw pushing</b> (Aggressive 3)	Continuous pressing of claw(s) on opponent's body	<b>Pushing - pulling</b>	An animal attempts to displace the other through pushing or pulling using walking legs and pleopods	<b>Push</b> (social behaviour)	One animal extending claws against another and maneuvering him backwards	<b>Claw push</b> (Aggressive)	NM	<b>Pushing</b> (Aggressive behaviour)	When the animals raise their bodies as high as possible on their walking legs and push against each other chelae. The abdomen is fully extended with its tail fan open. The pleopods beat rapidly. Often the cephalothorax and abdomen form an arc, so that the long body axis becomes concave dorsally. The antennae are raised to a vertical position. Walking legs are raised to a vertical position. Walking legs three or four are extended posteriorly, thus producing a greater horizontal force component when the legs are straightened. The chelipeds are spread wide apart with the long axes of their palms pointing directly at, and making contact with, the other lobster. After prolonged pushing, the long axes of the palms are often turned perpendicularly to the long body axis and now face each other. The chelae are usually kept closed and only rarely did one animal actually grasp the other. Duration = 30 sec
NM	NM	<b>Pull</b> (Strike 3)	A lobster attempts to displace an opponent through pushing and pulling using walking legs and pleopod and/or uses claws to push and/or punch claws or body of the opponent	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
NM	NM	NM	NM	<b>Claw tap</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Claw tapping</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw tapping</b> (Physical contact claws not used to grasp 3)	Short, discontinuous touching of chelae to opponent's body	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
<b>Claw scissoring</b>	NM	<b>Scissor</b> (Fight 4)	Rapid scissoring motion with both claws at opponent	<b>Claw scissoring</b> (Physical contact 3)	See Atema and Voigt (1995)	<b>Claw scissoring</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw scissoring</b> (Physical contact claws not used to grasp 3)	Bringing chelae from a laterally extended position rapidly inward in a scissor motion in front of opponent's body (may touch opponent in process)	<b>Claw scissoring</b>	Both claws rapidly crossing in front of body from meral spread	NM	NM	NM	NM	NM	NM	<b>Scissoring</b> (Aggressive behaviour)	Occurs when one lobster faces its opponent, with chelae in the meral spread posture (spread wide apart, long axes of the palms pointing at the adversary). The chelae are then rapidly brought together in a scissoring motion. As a result, they either strike or pass rapidly in front of the other animal. Simultaneously the lobster raises itself 7cm off the bottom which is about as far as its walking legs extend. Sometimes this action is so rapid and vigorous that the lobster leaves the bottom momentarily. Most other body parts remain as they were before scissoring begins. Duration = 1 sec, but observed during almost every agonistic encounter.
<b>Claw boxing</b>	Back- or forehanded striking motion toward opponent - Box hooking/punching. One or both claw is armed backwards and quickly punch the opponent's body and/or claw	<b>Punch</b> (Strike 3) / <b>Claw strike</b> (Fight 4)	A lobster attempts to displace an opponent through pushing and pulling using walking legs and pleopod and/or uses claws to push and/or punch claws or body of the opponent / A lobster strikes towards the opponent with one or both of its claws	<b>Claw box</b> (Claw lock 4)	See Atema and Voigt (1995)	<b>Claw boxing</b> (Physical contact claws not used to grasp 3)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw boxing</b> (Physical contact claws not used to grasp 3)	Vigorous, rapid (jabbing) touching of chelae to opponent's body	<b>Claw boxing</b> (Aggressive 3)	Back- or forehanded striking motion toward opponent	<b>Claw strike</b>	A lobster strikes towards the opponent with one or both of its claws	<b>Jab - boxing</b> (social behaviour)	Poking at other animals' body or claws with own claws	NM	NM	<b>Boxing</b> (Aggressive behaviour)	During continuous pushing, one individual occasionally withdrew a chela and then began pushing or jabbing its opponent. Duration 2-6 sec
<b>Claw grasping</b>	Clamping of claws onto opponent's claw(s) or body	<b>Claw grasp</b> (Fight 4)	A lobster uses its claws to grab and appendage of the opponent	<b>Claw lock</b> (Physical contact 4)	See Atema and Voigt (1995)	<b>Claw locking</b> (Physical contact claws used to grasp 4)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw lock</b> (Physical contact claws used to grasp 4)	Clamping of chelae onto opponent's body, commonly the opponent's chelae	<b>Claw locking</b> (Aggressive 4)	Clamping of claws onto opponent's claw(s) or body	<b>Claw grasp</b>	A lobster uses its claw to grab an appendage of the opponent	NM	NM	NM	NM	NM	NM
<b>Claw locking</b>	"Handshaking" of crusher claws	<b>Claw stretch</b> (Fight 4)	Claws interlocked with opponent, forward stretch of one claw while other claws defends against opponent's outstretched claw	<b>Claw lock</b> (Physical contact 4)	See Atema and Voigt (1995)	<b>Claw locking</b> (Physical contact claws used to grasp 4)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw lock</b> (Physical contact claws used to grasp 4)	Clamping of chelae onto opponent's body, commonly the opponent's chelae	<b>Claw locking</b> (Aggressive 4)	Clamping of claws onto opponent's claw(s) or body	<b>Claw grasp</b>	A lobster uses its claw to grab an appendage of the opponent	<b>Claw lock</b> (social behaviour)	Hand-shake position (crusher locked on crusher) while animals are in a Face Off position	<b>Claw lock</b> (Aggressive)	NM	NM	NM
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Swat</b> (social behaviour)	Swinging of seizer claw of one lobster toward the other - as in a "right hook" usually occurs during a claw lock	NM	NM	NM	NM
<b>Claw ripping</b>	(Rapid) grasp and pull with either claw	<b>Claw rip</b> (Fight 4)	A rapid motion in which a lobster grasps the opponent and pulls at it quickly	<b>Claw rip</b> (Unrestrained 5)	See Atema and Voigt (1995)	<b>Claw ripping</b> (Unrestrained use of claws 5)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw ripping</b> (Unrestrained use of claws 5)	Rapid motion in which lobster grasps a body part of the opponent with its chelae and pulls back quickly with its chelae or jumps away	<b>Claw ripping</b> (Aggressive 5)	(Rapid) grasp and pull with either claw	<b>Claw rip</b>	A rapid motion in which an animal grasps the opponent and pulls at it quickly	<b>Rip</b> (social behaviour)	Quick jerk of body while in claw lock - a very high intensity pull using the whole body	NM	NM	NM	NM
<b>Claw snapping</b>	Rapid opening and closing of (seizer) claw (toward opponent)	NM	NM	<b>Claw snap</b> (Unrestrained 5)	See Atema and Voigt (1995)	<b>Claw snapping</b> (Unrestrained use of claws 5)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Claw snapping</b> (Unrestrained use of claws 5)	Opening and closing chelae quickly, directed towards opponent's body (may or may not actually seize opponent)	<b>Claw snapping</b> (Aggressive 5)	Rapid opening and closing of (seizer) claw (toward opponent)	NM	NM	<b>Snap</b> (social behaviour)	Quick opening and closing of seizer claw, usually without contact (often follows a lunge)	NM	NM	NM	NM

This study		Gherardi et al. 2010		Skog et al. 2007		Breithaupt and Atema 2000		Karavanich and Atema 1998		Atema and Voigt 1995		Huber and Kravitz 1995		Stein et al. 1975		Atema and Engstrom 1971		Scrivener 1971			
<b>Legs</b>																					
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Groom</b> (Non social behaviour)	Rub, scratch or pick at parts of the body with the walking legs	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Rake</b> (Non social behaviour)	Back and forth movement of one or more walking legs across the substrate while the body is still (-)	NM	NM	NM	NM	
<b>Sand removing</b>	Legs are used to remove sand, which result in back-and - or forward body movements	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
<b>High on legs</b>	Legs stretch which raise the body high off substrate	NM	NM	<b>High on legs</b> (Threat display 2)	See Atema and Voigt (1995)	<b>High on legs</b> (No physical contact threat display 2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>High on legs</b> (No physical contact threat display 2)	Body is raised above the substrate on fully extended walking legs	<b>High on legs</b> (Aggressive 2)	Body raised high off substrate	<b>Body up</b>	The body is raised high above the substrate on fully extended walking legs	NM	NM	NM	NM	NM	NM	NM	
<b>Body (carapace + tail)</b>																					
NM	NM	NM	NM	<b>Separate</b> (Separate 0)	> 1 body length apart, no activity	<b>All behaviours taking place beyond one body length from another animal</b> (Activity A) NM	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Separate</b> (0)	Distance between lobsters greater than one body length	<b>Separating</b> (Neutral 0)	> 1 body length apart	NM	NM	NM	NM	NM	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Exopodite fanning</b> (Neutral 0) NM	Beating of exopodites of maxillipeds	NM	NM	NM	NM	NM	NM	NM	NM	NM	
<b>Resting</b>	Body not moving	NM	NM	NM	NM	<b>Separate and no activity</b> (No activity 0)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	<b>Turning while facing</b> (No physical contact within one body length 1) NM	See Atema and Voigt (1995) and Karavanich and Atema (1998)	NM	NM	<b>Rapid turning</b> (Neutral 0)	Turning not related to opponent	NM	NM	NM	NM	NM	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	Walking	NM	NM	NM	NM	Walk (Non social behaviour)	A series of uninterrupted steps, forward or backward	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Near</b> (social behaviour)	One animal walking close to another unintentionally - i.e. not to "purposefully" initiate and encounter	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>No response</b> (social behaviour)	No reaction to an initiating response of another animal	NM	NM	NM	NM	
<b>Turning toward</b>	Turning so rostrum points toward opponent	NM	NM	<b>Turn towards</b> (Approach 1)	See Atema and Voigt (1995)	<b>Turning toward</b> (No physical contact within one body length 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Turning towards</b> (No physical contact initiation 1)	Lobster is rotating body so that after turn, the lobster is facing the opponent	<b>Turning toward</b> (Aggressive 1)	Turn directed toward opponent	NM	NM	NM	NM	NM	NM	NM	NM	<b>Rapid turning</b> (Aggressive behaviour)	Shown only by aggressive individuals, when their opponent approaches them from the rear. The abdomen appears to be flexed at an angle and the lobster rotates 180° in less than 1 sec. With its chelipeds in the meral spread posture, it is now facing the antagonist. Rare behaviour (also seen when lobster responded to the net).
<b>Turning away</b>	Turning so rostrum points away from opponent	<b>Retreat</b> (Avoidance 0)	A lobster moves or turns away from an opponent	<b>Turn away</b> (Avoidance - 1)	See Atema and Voigt (1995)	<b>Turning away from opponent</b> (Fleeing -1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Turning away</b> (Avoidance -1)	Lobster is rotating body so that after turn, the lobster is no longer facing the opponent	<b>Turning away</b> (Submissive 1)	Turning so rostrum points away from opponent	<b>Retreat</b>	An animal moves or turns away from an opponent	NM	NM	NM	NM	NM	NM	NM	NM
<b>Walking away</b>	Walking so rostrum points away from opponent	<b>Retreat</b> (Avoidance 0)	A lobster moves or turns away from an opponent	<b>Walk away slowly</b> (Avoidance - 1)	See Atema and Voigt (1995)	<b>Walking away slowly</b> (Fleeing - 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Walking away slowly</b> (Avoidance -1)	Walking forward and increasing distance from opponent (speed less than one body length/5 s)	<b>Walking away, slow</b> (Submissive 1)	Slow equals < 1 body length/5sec	<b>Retreat</b>	An animal moves or turns away from an opponent	<b>Flee - running away</b> (social behaviour)	One animal quickly moving forward in an opposite direction from another during an encounter, usually following a Face Off and ending the encounter	<b>Retreat</b> (Defensive)	NM	<b>Walking away</b> (Avoidance behaviour)	Individual moves forward away from its opponent. The abdomen is fully extended with its pleopods stationary and tail fan open. The chelipeds are held 2cm off the bottom, with the palms pointing inward about 30° from the longitudinal body axis. The antennae are usually perpendicular to the body axis, but parallel to the substrate. The method and velocity of locomotion is very similar to following. Duration = few sec to 30 sec, common behaviour pattern but not demonstrated during every agonistic encounter because usually a retreating lobster preferred to face its opponent and back away.		
<b>Walking away</b>	Walking so rostrum points away from opponent	<b>Retreat</b> (Avoidance 0)	A lobster moves or turns away from an opponent	<b>Walk away quickly - Run away</b> (Avoidance - 2)	See Atema and Voigt (1995)	<b>Fast walking away</b> (Fleeing -2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Walking away rapidly</b> (Fleeing - 2)	Walking forward and increasing distance from opponent (speed greater than one body length/5 s)	<b>Walking away, fast</b> (Submissive 2)	Slow equals > 1 body length/5sec	<b>Retreat</b>	An animal moves or turns away from an opponent	<b>Flee - running away</b> (social behaviour)	One animal quickly moving forward in an opposite direction from another during an encounter, usually following a Face Off and ending the encounter	<b>Retreat</b> (Defensive)	NM	<b>Running away</b> (Avoidance behaviour)	Occurs when lobster turns away from its adversary and moves away at a rapid velocity. The cephalothorax is held parallel to the bottom, with the abdomen fully extended and its pleopods rapidly beating. The abdomen is often arched upwards with the expanded tail fan about 5-7cm off the substrate. Enough frictional force may be produced, as the water passes up and over it, to keep the lobster firmly on the bottom; thereby providing better traction. The antennae are held parallel to the bottom and perpendicular to the body axis when running begins. If running is continued for 4 sec or longer, the antennae turn posteriorly so that they become parallel to the body axis. The chelipeds are held quite close together with their palms turned outward slightly. The method of locomotion is similar to that described for rushing. Velocity = 0.5m/s (slower than rushing). Often running away was observed only a few seconds, before sensory contact between the combatants was lost. It occurred frequently when one animal approached the other from the rear.		
<b>Walking parallel</b>	Walking parallel to the body axis of the opponent	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	
Non observed	Non observed	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Sideways</b> (social behaviour)	Forward and lateral walk simultaneously - crablike movement usually as avoidance	NM	NM	<b>Side-ways</b> (Avoidance behaviour)	The retreating lobster moves sideways away from an opponent, exposing on of its lateral surfaces. The abdomen extends fully, with its pleopods stationary against its ventral surface. The antennae are held in the normal resting posture at angles of 45°, pointing upwards from the tank bottom and away from the body axis. Sideways movement appears similar to normal locomotion among crabs, but is somewhat slower. Observed in half of the agonistic encounters, duration = few sec.	
<b>Walking backward</b>	Walking backward so rostrum points toward opponent	NM	NM	NM	NM	<b>Walking backward slowly</b> (Fleeing -1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Walking backward slowly</b> (Avoidance -1)	Retreating while continuing to face opponent (speed less than one body length/5 s)	<b>Walking backward, slow</b> (Submissive 1)	NM	NM	NM	NM	<b>Retreat - Backing</b> (social behaviour)	A direct consequence of advance or approach - a reverse walk or movement away from another animal (occurs within one body length distance)	<b>Retreat</b> (Defensive)	NM	<b>Backing</b>	Lobster's tail fan is folded and turned partially under the abdomen, with the stationary pleopods. The antennae are parallel with the bottom, and pointing straight ahead or at an angle of 45° from the long axis of the body. The chelae are pointed in the direction of the opponent. In this posture, the lobster is facing its adversary, while avoiding it by backing away. In a few instances the backing lobster was observed holding its chelae in the meral spread posture. Under these conditions the animal was considered to be backing and displaying meral spread. The movements of the walking legs appeared to be very similar to those shown when following, except that the process was reversed. Backing was observed during every encounter and it was the most common avoidance behaviour pattern. Max duration = 3min, velocity = 0.15-0.2m/s	
<b>Walking backward</b>	Walking backward so rostrum points toward opponent	NM	NM	NM	NM	<b>Fast walking backward</b> (Fleeing -2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Walking backward rapidly</b> (Fleeing -2)	Retreating while continuing to face opponent (speed greater than one body length/5 s)	<b>Walking backward, fast</b> (Submissive 2)	NM	NM	NM	NM	<b>Retreat - Backing</b> (social behaviour)	A direct consequence of advance or approach - a reverse walk or movement away from another animal (occurs within one body length distance)	<b>Retreat</b> (Defensive)	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Crouching</b> (Submissive 3)	<b>Crouch</b> (in corner), claws extended	NM	NM	NM	NM	NM	NM	<b>Submissive posture</b> (Defensive)	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Defensive posture</b> (social behaviour)	Tail tucked under body, body slightly raised, claws open and raised in front of the body, as a shield	NM	NM	NM	NM	
<b>Facing</b>	Body not moving and rostrum directed towards opponent	<b>Stand off</b> (Threat 2)	Complete stillness other than antennal movements, less than a body length apart	<b>Face</b> (Approach 1)	See Atema and Voigt (1995)	<b>Facing</b> (No physical contact within one body length 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Facing</b> (No physical contact initiation 1)	Lobsters are within one body length and positioned so that both rostrums are facing each other	<b>Facing</b> (Aggressive 1)	Facing each other, within one body length, no touching	NM	NM	NM	<b>Face off</b> (social behaviour)	Head to head confrontation within one body length distance	NM	NM	NM	NM	
<b>Walking towards</b>	Walking towards so rostrum points toward opponent	<b>Approach</b> (Approach 1)	A lobster advances towards an opponent slowly reducing the distance to less than a body length	<b>Walk towards</b> (Approach 1)	See Atema and Voigt (1995)	<b>Approaching slowly</b> (No physical contact within one body length 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Approaching</b> (No physical contact initiation 1)	Walking forward (speed less than one body length/5 s) towards opponent reducing separation to within 1 body length	<b>Approaching slow</b> (Aggressive 1)	Walking forward, toward opponent	<b>Approach</b>	A lobster advances towards an opponent slowly (< 1 body length/sec) reducing the distance between the animals to less than 1 body length	<b>Approach - Advance</b> (social behaviour)	Forward movement directed toward another lobster greater than 1 body length away - While in a Face Off, one animal move closer to the other	<b>Frontal approach</b> (Aggressive)	NM	<b>Approaching</b> (Aggressive behaviour)	Similar to following, except that in this case the animal moves towards a stationary opponent that is usually showing neither aggressive nor avoidance behaviour. The abdomen is fully extended, the tail fan expanded and the chelae are held as when following. The pleopods appear to be stationary, but the antennae are often almost parallel to the body axis. The lobster moves forward towards the other combatant, but at a lower velocity than when following. Durations 2-6 sec, and was commonly shown with meral spread.		
<b>Walking towards</b>	Walking towards so rostrum points toward opponent	<b>Lunge</b> (Approach 1)	Rapid and direct head-first advance towards opponent(s) without hesitation, often with claws outstretched	<b>Run towards</b> (Threat display 2)	See Atema and Voigt (1995)	NM	NM	NM	Walking forward while opponent is walking away	<b>Approaching fast</b> (Aggressive 1)	NM	<b>Lunge</b>	Similar to approach, but advance towards the opponent is rapid (> 1 body length/sec)	NM	NM	<b>Chasing</b> (Aggressive)	NM	<b>Rushing</b>	One lobster with its chelae in the meral spread posture rush or run towards an opponent. The abdomen is fully extended, with pleopods rapidly beating and tail fan open. During this activity the lobster's body is held about 2 cm off the bottom. At first, the antennae point forward at angles of 45° from the bottom and long body axis, but if rushing continues for more than 2 seconds, they are rapidly turned - as opposed to the usual slow antennae movements - to point backwards at an angle of 20° from the body axis. This movement requires an additional 2 sec and is often not complete before rushing is terminated. Maximum velocity = 0.7m/s. Steps of about 14 cm were taken with the second and third pair of walking legs. This was about twice the distance between fore-steps that the lobsters made when they were following. Rushing was observed at least once during each agonistic behaviour. Duration = 1-6 sec. During long rushes, there was a slight variation, the lobster would extend its chelae straight ahead towards the adversary.		
NM	NM	NM	NM	<b>Follow</b> (Approach 1)	See Atema and Voigt (1995)	<b>Following slowly</b> (No physical contact within one body length 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Following</b> (No physical contact initiation 1)	Walking towards opponent while opponent is walking away	<b>Following slow</b> (Aggressive 1)	Walking toward opponent while opponent moves away	NM	NM	NM	<b>Follow</b> (social behaviour)	Slow movement of one animal after another which has moved away	NM	NM	<b>Following</b> (Aggressive behaviour)	When one lobster is following another, the abdomen is fully extended, with the tail fan fully opened. The chelipeds are held about 3cm off the bottom, with the long axes of the palms pointed towards each other distally. The pleopods are stationary as during meral spread, but the antennae are often perpendicular to the body axis. In this posture, the lobster simply follows its opponent. During this behaviour, steps of approximately 7cm are taken with the second and third pair of walking legs. The first and fourth pair of walking legs appear to be actively moved only half this distance. Maximum duration = 3min, and a lobster follow at about 0.15m per second.	
<b>Chase</b> (Strike 3)	Rapid pursuit of retreating opponent	<b>Chase</b> (Strike 3)	Rapid pursuit of retreating opponent	NM	NM	<b>Fast following</b> (No physical contact within one body length 1)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Following</b> (No physical contact initiation 1)	Walking towards opponent while opponent is walking away	<b>Following fast</b> (Aggressive 1)	NM	NM	NM	<b>Chase</b> (social behaviour)	Quick movement of lobster in pursuit of another, during an interaction	<b>Chasing</b> (Aggressive)	NM	NM	NM	NM	

This study		Gherardi et al. 2010		Skog et al. 2007		Breithaupt and Atema 2000		Karavanich and Atema 1998		Atema and Voigt 1995		Huber and Kravitz 1995		Stein et al. 1975		Atema and Engstrom 1971		Scrivener 1971		
<i>Tail</i>																				
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Tail under</b> (Neutral 0)	Abdomen flexed under cephalothorax	NM	NM	NM	NM	NM	NM	NM	NM	
NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<b>Pleopod beating</b> (Neutral 0)	Fanning movement of pleopod appendages	NM	NM	NM	NM	NM	NM	NM	NM	
		<b>Tail-flip escape</b> (Avoidance 0)	A contraction of the abdomen which propels the lobster backward for a rapid escape	<b>Tail flip away</b> (Avoidance - 2)	See Atema and Voigt (1995)	<b>Tail flipping</b> (Fleeing -2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Jumping away</b> (Fleeing -2)	Rapid flexion of abdomen causing lobster to quickly propel itself backwards, away from opponent (tail flip)	<b>Tail flipping</b> (Submissive 3)	Fast, backward escape (with claws and legs extended)	<b>Tailflip</b>	An escape response during which a rapid contraction of the abdomen propels a lobster backward	<b>Tail flip - abdomen flex</b> (social behaviour)	Rapid flexing of the abdomen under the body so as to propel the animal backwards – an escape movement)	NM	NM	<b>Abdomen flexing</b> (Avoidance behaviour)	Vigorously pushes its body upwards and backwards with the four pairs of walking legs. This raises the individual off the bottom and propels it backwards through the water. As it leaves the bottom, the lobster brings its antennae, chelae and walking legs together anteriorly, to point straight ahead (parallel to the body axis). The legs are now close to the ventral surface of the cephalothorax. This posture produces a streamline body form which is less resistant to backward movement through the water. The open tail fan is rapidly brought down under the body by contraction of the ventral abdominal muscles (the abdomen is now folded in upon itself). This propels the lobster backwards approximately 1m. As it sinks to the bottom, the individual moves the walking legs back to their normal position (perpendicular to the axis). The abdomen may flexed several times, before the animal returns to the bottom. This is accomplished by folding the tail fan, while the abdomen is being extended; then expanding it, before the abdomen is flexed again. Usually the animal is carried far enough for its adversary to lose sensory contact. When a lobster is approached from the rear it often propels itself completely over the top or the opponent. Occurred in every agonistic encounter, duration = few sec, velocity = 0.9/sec.	
<b>Tail flipping</b> Fast, backward escape (with claws and legs extended)		NM	NM	<b>Jump away</b> (Avoidance - 2)	See Atema and Voigt (1995)	<b>Jumping</b> (Fleeing -2)	See Atema and Voigt (1995) and Karavanich and Atema (1998)	<b>Jumping away</b> (Fleeing -2)	Rapid flexion of abdomen causing lobster to quickly propel itself backwards, away from opponent (tail flip)	<b>Jumping</b> (Submissive 2)	Quick, upward-directed tail flip	NM	NM	NM	NM	NM	NM	<b>Jumping</b> (Avoidance behaviour)	Flexes the abdomen vigorously in a manner similar to that described for abdomen flexing but claws are held in the normal mesal spread posture and the walking legs remain perpendicular to the body axis. The animal flexes its abdomen only once and is propelled backwards about 60 cm before returning to the bottom. Max duration = few sec, half of the encounters. Jumping appeared to be a reflex variation of abdomen flexing. The animals did not lose sensory contact when one of them had performed the behaviour pattern, because immediately afterwards they continued their agonistic behaviour.	
		<b>Tail-flip</b> (Fight 4)	Contraction of the abdomen to propel animal backwards in an attempt to rip off opponent's appendage	<b>Aggressive tailflip</b> (unrestrained 5)	See Atema and Voigt (1995)	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	