

Single-target visual search tasks provide only a snap-shot of attentional orienting:
New insights from visual foraging tasks.

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The assessment of the functional properties of visual attention has in past decades been dominated by single-target visual searches, where observers search for a target among distractors, and the search ends when the target is found. But our goals from one moment to the next are unlikely to involve only a single target, and more recently, paradigms involving visual foraging for multiple targets have been used to investigate visual attention. Set-size effects in single-target visual search tasks partly form the foundation of many theories of visual search. We therefore manipulated set-size in a visual foraging task, involving both “feature” and “conjunction” foraging. The target selection times during foraging revealed specific components of the foraging pattern: 1) a ‘cruise phase’ where observers select targets very rapidly, far more quickly than typical response times in visual search. 2) During conjunction foraging there were distinct mid-peaks that reflect switches from one target-type to the other 3) Finally there were end-peaks in selection times during both feature and conjunction foraging reflecting slowed responses when observers tap the last target. Strikingly, these end peaks replicate well-known set-size patterns seen during single-target visual search tasks, showing how single-target tasks only provide a snapshot of visual attention. Our foraging results reveal how dominant single-target visual search paradigms may only scratch the surface of attentional function, and that typical single-target search patterns are only seen for a limited part of the foraging pattern, in particular, the last target. Our results show how single-target visual search tasks vastly undersample the operation of visual attention, providing only a snap-shot of attentional function and this limited information is bound to be reflected in theoretical accounts based on such tasks.